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ABSTRACT

This report, one of a series of manpower studies, presents various series of data on the manpower of Czechoslovakia, especially for the years 1950-70, and two projections of the economically active population for the years 1971-90. The different measures are defined, the population base, manpower trends, and the general manpower situation are discussed, and the assumptions and methods used in preparing the projections are described. Specific attention is given to the utilization of manpower in agriculture. Four chapters describe the Czechoslovakian labor force. Chapter one explains the current manpower situation, and defines manpower concepts. The second chapter deals with labor resources broken down into total and economically active population. The civilian employed population is described in chapter three and topics covered are: branch of economy, branch of industry, socialization of economy, class of workers, employment of women, and specialized manpower. In chapter four prospects for future growth are discussed. Three appendices are: 1) Special measures of agricultural manpower; 2) Labor inputs; and, 3) Labor utilization in agriculture. Numerous tables are included and a bibliography is provided. (Author/SJM)

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MANPOWER TRENDS IN CZECHOSLOVAKIA: 1950 TO 1990

by

ANDREW ELIAS

Foreign Demographic Analysis Division

International Population Statistics Reports
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PREFACE

This report is one of a series of studies of manpower in Eastern European countries being carried out by the Foreign Demographic Analysis Division of the Bureau of Economic Analysis (formerly of the Bureau of the Census). It presents various series of data on the manpower of Czechoslovakia, especially for the years 1950-70, and two projections of the economically active population for the years 1971-90. The different measures are defined, the population base, manpower trends, and the general manpower situation are discussed, and the assumptions and methods used in preparing the projections are described. Specific attention is given to the utilization of manpower in agriculture. This study takes account of information available as of October 1971.

This report was prepared in the U.S.S.R./East Europe Branch, Murray Feshbach, Chief. It supersedes an earlier report entitled The Labor Force of Czechoslovakia, by James N. Ypsilantis, International Population Statistics Reports, Series P-90, No. 13, published by the U.S. Bureau of the Census in 1960. Comments are invited and should be addressed to the Chief, Foreign Demographic Analysis Division, 24 M Annex, Department of Commerce, Washington, D.C. 20230.

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I. Introduction

A. Highlights

As of July 1, 1970, the economically active population in Czechoslovakia was estimated at 7.2 million persons, or nearly 50 percent of the total population of 14.5 million.[1] This represents an increase since 1961 of about 11 percent, or 1.2 percent per year, as compared with a growth of 5 percent in the total population, or 0.6 percent per year. During the earlier intercensal period, 1950-61, both the economically active and the total population grew at about the same rate, 1.0 percent per year.[2]

Throughout the postwar period, the Czechoslovak economy has operated with a very tight labor market. The first shortages of industrial labor were created as a result of the departure of the German minority population in 1945-46. Later, during the period of the first 5-year plan (1949-53), many women, including newly employed housewives, were assigned to jobs previously held by men as the latter were transferred to more arduous duties. It was also at this time that the first large numbers of persons began to leave agriculture for employment in industry and other branches. The agricultural exodus, although slowed down or halted in the mid-fifties, resumed around 1957 and created a chronic shortage of agricultural labor, especially of younger and more qualified personnel. In recent years, additions of housewives to the labor force seem to have reached a point of exhaustion, especially in the Czech Lands.[3] To alleviate the current labor shortage, which is much more serious in the Czech Lands than in Slovakia, authorities have adopted a number of measures to control employment at the plant level, to reinforce labor discipline, to direct certain nonessential workers and employees to labor-short "priority" branches, and to encourage retiring workers in labor-short branches to continue working.

The economically active population in Czechoslovakia is expected to increase from the estimated 7.2 million in 1970 to between 7.7 and 8.0 million by midyear 1990, depending upon the assumptions made in regard to the future participation of the population in economic activities. These assumptions produce different results primarily in respect to the proportion of women in the labor force. The lower variant of the projected labor force is based on the assumption that the participation rates of males aged 25 to 59 and females aged 25 to 54 will remain at their 1970 level, while the participation rates of both males and females below and above those age groups will decline. The higher variant of the projected labor force is based on the assumption that the participation rates of all males and of the females aged 15 to 24 and 55 and above will remain at their 1970 levels, while the rates of females aged 25 to 54 will increase. Given the current labor shortage in Czechoslovakia, no allowance was made for a decline in the participation rates of males aged 25 to 59 or of females aged 25 to 54 in either of the variants.

The economically active population in the Czech Lands increased by 16 percent between 1950 and 1961, while in Slovakia the increase amounted to only 2 percent during the same period. This substantial difference in growth was due entirely to the employment of women, which grew by 36 percent in the Czech Lands, whereas it

[1] Preliminary results from the census of December 1, 1970, were received after the estimates and projections of the total and economically active populations presented in this report had been prepared. The data published are so meager in detail, particularly in respect to an age-sex distribution of the total population and the definition and composition of the economically active population, that these census results have not been used. For further discussion of the census results, see notes 1 and 15 to chapter II.

[2] In addition to the three censuses (1950, 1961, and 1970) taken in Czechoslovakia since the end of World War II, population surveys were conducted in Slovakia as of October 4, 1946, and in the Czech Lands as of May 22, 1947. Due primarily to the incomplete coverage of these surveys, as well as to differences in the classification of the economically active population as compared with that in the censuses, data from the surveys have not been utilized in this report.

[3] The historical term "Czech Lands" is used in this study--as it is used in Czechoslovak literature--to refer to Bohemia and Moravia, or what is presently called the Czech Socialist Republic. The term Slovakia refers to the Slovak Socialist Republic.

declined by 15 percent in Slovakia. This apparently opposite trend in the economic activity of women in the two regions was due basically to differences in the enumeration of women as active in agriculture in 1961.

The number of persons economically active in Czechoslovak agriculture declined by about 38 percent from 1950 to 1970, so that its proportion in the total economically active population dropped by one-half, from 38 to 19 percent. However, other measures of agricultural manpower, as shown in appendix A, indicate that the decline in agricultural labor may not have been as rapid as the statistics on the economically active population suggest. In contrast, the economically active population in nonagricultural branches rose by 62 percent during these years. Industry accounted for the largest share of nonagricultural manpower both in 1950 (50 percent) and in 1970 (46 percent). On the basis of the present structure of her labor force, Czechoslovakia is one of the most industrialized countries of the world.

The postwar socialization of the Czechoslovak economy brought about significant changes in the structure of employment by sector. At the end of 1948, considerably more than half of the total employment was still in the private sector. By the end of 1960, this sector accounted for only 4 percent of total employment, and by the end of 1969 its share had dropped to 2 percent. Practically all private employment that still exists in Czechoslovakia today is found in agriculture.

At the end of 1969, well over 3 million women were employed in the Czechoslovak economy, or about 46 percent of all employed persons. Until about 1960 most employed women were engaged in agricultural activities, but during this past decade their numbers have been growing rapidly in almost every branch of the economy and at the end of 1969 they constituted more than half of the employed population in seven nonagricultural branches. In only four branches--construction, transportation, forestry, and science and research--did women constitute less than one-third of total employment.

The number of specialists (higher and specialized secondary school graduates) employed in the Czechoslovak economy increased from 733,000 in 1959 to 1,111,000 in 1966, or by about 52 percent. This rate of increase was five times as fast as that for total employment and resulted in a rise in the proportion of specialists from 12 to 17 percent of the total. Czechoslovakia has proportionately many more specialists in the labor force than does the Soviet Union, and more than twice as many as does Poland.

B. Current manpower situation

One of the factors inhibiting the economic development of Czechoslovakia since the end of World War II has been the shortage of labor. The departure of the Sudeten Germans in the immediate postwar years created shortages of labor in certain regions and branches of the economy, particularly in industry. Employment in industry and most other nonagricultural branches has grown markedly throughout the ensuing years, but labor shortages have continued, due at least partially to poor management and utilization of available labor resources, and to the investment policies adopted by Czechoslovak planners.

Judging by the frequency of concern expressed recently by various writers, the present manpower situation may be diagnosed as somewhere between bad and critical. The supply of labor reportedly is one of the most serious factors limiting further growth of the Czechoslovak economy.[4] Decent wages and increased attention to the production of consumers' goods could still attract additional housewives into employment, but their number, especially in the Czech Lands, is practically exhausted.[5] In Slovakia the situtation is somewhat better, especially with regard to the size of the younger age groups of both sexes, but also with respect to other factors such as the supply of certain natural resources and the relative newness of industrial plants. It appears, therefore, that the tasks in the near future will concern the reconstruction and modernization of existing plants in the Czech Lands and the further exploitation of local raw materials and construction of new plants in Slovakia. According to some writers, the Czech Lands cannot support an increase in employment, especially in industry, although there are critical manpower shortages in uranium and coal mining and in agriculture.[6] Moreover, sub-

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[4]See, e.g., Havelka, "To Economize," 1970, pp. 1 and 4; Janiček, "Consolidation," 1969, p. 26; Kutálek, "The Possibilities," 1969, p. 3; and "Rationalization," 1971, p. 1.

[5]Recently, when practically all young married women either get a job or continue in school, the category of housewives is becoming limited to older married women and to those in the younger age groups who remain unemployed longer than 1 year after the birth of their child. Eventually, the category of "housewives" is expected to disappear and a new category with the rather clumsy name, "women who interrupted their economic activities for a period longer than 1 year," may take its place. See Volf and Janderová, "What Kind," 1966, pp. 555-556.

[6]"Economizing," 1971, p. 1; "To Come," 1969, p. 3; Trend, Czechoslovakia's, 1969, p. 81; Vlasák and Říha, "What Next," 1969, p. 60; and Všetička, "On the Regulation," 1971, pp. 1-2.

stantial migration of surplus Slovak labor to the Czech Lands, as experienced in the past, will hardly--if the present federal structure is to continue--be acceptable to Slovakia. Compared to the level of economic activity of women in the Czech Lands, Slovakia may still have at present a potential supply of at least 120,000 persons among her unemployed women. As recently as 1968 there were few appropriate jobs for these potential labor entrants,[7] and the possibility of their migration to the Czech Lands seemed to be out of the question.

According to the data given in table 1, there were more than 87,000 job vacancies in Czechoslovakia at the end of 1969, of which over 20,000 were in Slovakia. Most vacancies in the Czech Lands (51 percent) were for auxiliary or unskilled workers, and this proportion in Slovakia was only slightly lower (48 percent). Of the 24,000 vacancies open to women, close to two-thirds were for unskilled workers. About 18 percent of all job vacancies were located in the capital city of Prague, where the supply of new labor falls considerably short of demand and affects not only factories but also services for local inhabitants. The total number of vacancies in the country indicated by these data does not appear to be large, but it may well be understated; the figures may represent only those vacancies registered with a labor recruitment office. The source does note that the shortage of labor is quite serious in certain large enterprises which produce for export or for other branches of industry.[8]

[7]Bartoš, "Labor," 1968, p. 449, and "Economic," 1971, p. 2. Another source suggests that the labor reserves among the unemployed women may be as high as 260,000. See Bartek, "Industrialization," 1971, p. 9.

[8]Havelka, "What to do," 1970, p. 8. One concomitant of a labor-short economy is the relatively poor utilization of machinery and equipment. The shift coefficient for industry (an indicator of the degree to which industrial workers are assigned to multishift work; a coefficient of one indicates all workers are on one shift, a coefficient of three indicates that they are evenly divided on three shifts) has consistently been under 1.4 for the last 10 years. This is lower than such coefficients for other countries of Eastern Europe. Furthermore, the coefficient has been steadily declining in the country as a whole--from 1.385 in 1960 to 1.360 in 1967--and in the Czech Lands--from 1.381 in 1960 to 1.335 in 1967. In Slovakia, there was a slight increase from 1.449 in 1960 to 1.455 in 1967. It is particularly low (1.279 in 1968) in the machine-building and metalworking industry, which is by far the most important industrial branch in the country. To raise this coefficient for all industry to 1.5 would require an increase in employment by 150,000 to 200,000 workers. Ibid.

Table 1. JOB VACANCIES, BY REGION: 1969

(As of end of year)

Region	Total		Auxiliary workers		Skilled and trained workers		Administrative personnel	Engineering and technical personnel
	Both sexes	Women	Both sexes	Women	Both sexes	Women	Both sexes	Both sexes
Czechoslovakia.....	87,167	23,972	43,823	15,041	36,996	6,129	3,591	2,757
Percent.....	100.0	100.0	50.3	62.7	42.4	25.6	4.1	3.2
Czech Lands.....	66,884	19,474	34,093	12,233	27,666	4,912	2,766	2,359
Of which, in Prague.....	15,682	5,342	6,402	2,520	5,847	1,168	1,777	1,656
Slovakia.....	20,283	4,498	9,730	2,808	9,330	1,217	825	398

Source: Havelka, "What to do," 1970, p. 8.

One possible contribution to resolving the manpower shortage in Czechoslovakia may be the import of foreign workers. There is already a relatively small number of foreigners employed in Czechoslovakia. For example, Polish, Yugoslav, Romanian, and Italian construction companies employ their own crews in Czechoslovakia; there were Bulgarians, as there are now Poles, employed in Czechoslovak mines; and there have been cases of Hungarian workers as well as Soviet

soldiers helping to alleviate labor shortages in various parts of the country.[9] On the other hand, there are official objections to the import of large numbers of foreign workers because it would cause a considerable outflow of money in wages as well as social insurance payments and old-age pensions. Some writers have suggested that foreign workers be admitted in small numbers and that they be employed in border areas only.[10]

The current labor shortage, as well as that in the past, clearly is partially the result of the poor organization and management of manpower. There may actually be some branches of industry which would have a labor surplus if their workers were better utilized. For instance, various surveys indicate that the utilization of total work-time in machine-building fluctuates between 70 and 85 percent; in construction, between 55 and 70 percent; and in assembly work at construction sites, between 40 and 65 percent.[11] The work-time fund (the number of work days available in a calendar year) in Czechoslovak industry reportedly is being utilized at present only at about 91 percent of its potential, and the trend has been for it to decline over time. Each percentage point of decline represents a loss of work of about 25,000 persons.[12] Also, as described below in appendix A, some surplus of workers could result from a better utilization of labor in agriculture.

In addition to the poor utilization of work-time, the occupational distribution of workers, especially those in the younger age groups, seems to be out of line with their qualifications. A recent statement indicates that about 30 percent of young workers are employed in jobs other than those for which they were trained.[13] This percentage apparently is much higher in the Czech Lands than in Slovakia. Some Czechoslovak writers have noted that such misplacement of personnel leads to frequent job changes and is one of the main causes for the high rate of turnover of Czechoslovak labor.[14]

Labor shortage is also the result of the investment policies adopted by Czechoslovak leaders throughout the postwar period. For example, these policies favored a heavy concentration on construction of new plants or expansion of old plants in heavy industry to the virtual neglect of facilities in the light and food industries. In many cases they also favored new construction or development in the Czech Lands, where labor was already scarce, over investment in Slovakia where the supply of workers was relatively abundant. Numerous Czechoslovak economists, analyzing their country's economic difficulties of the 1960's, have pointed out the effect these investment policies have had in creating conflicting demands for labor and have also noted the poor planning and managerial practices which have led to malutilization of human resources.[15]

Whether the plans, policies, and practices have been good or bad, however, Czechoslovak leaders today must operate their factories, farms, and institutions with the labor resources at hand, and the shortages are apparently quite real in their eyes since there has been recently introduced a number of measures which will affect the planning and utilization of labor in the country. For example, by the beginning of 1970, all enterprises and organizations in the state and cooperative sectors (excluding agricultural cooperatives--JZD) were to begin preparing for recordkeeping on labor according to a Uniform Manpower Register which contains a list of 49 indicators.[16] Reporting on the basis of this register was to begin by the end of 1970. This information is to be used as the basis for long-term manpower studies and as the foundation for the determination of wage policies.[17]

Another measure has made wages a medium of control over the size of employment at individual enterprises. In 1969, the Czechoslovak Federal Assembly passed a law on the system used for taxing enterprises. Differential tax rates are imposed in direct correlation with the growth of average wages over a preceding year. Thus, if wages grow between 3 and 5 percent in comparison with the preceding year, the tax rate is increased by 1.5 percent, plus the amount by which the growth of average wages exceeds the lower limit of the range. If wages increase between 5 and 7 percent, the tax rate is increased by 3.5 percent plus 1.5

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[9]See Černý, "To Import," 1969, pp. 385-386; Cioran, "Romanian," 1970, p. 13; Hofmann, "Prague," 1969, p. 5; "Live," 1969, p. 1; and "Polish Workers," 1970, p. 3.

[10]For example, see Dinka, "Labor Force," 1970, p. 4.

[11]Váně, "Labor," 1969, p. 7.

[12]Ibid. See also Havelka, "On the Questions," 1970, pp. 321-325.

[13]"Critical," 1970, p. 2.

[14]See Bartek, "Illness," 1971, p. 4, and Blažek and Juránek, "What Is," pp. 383-388.

[15]For discussions of these issues by Czechoslovak writers see "Exchange," 1966, pp. 143-153; Hoffmann, "The Effectiveness," 1966, pp. 111-128; Kouba, "The Relationships," 1964, pp. 11-22; Mihalik, "To the Creation," 1966, pp. 130-151; Musil, "Structural," 1968, pp. 46-53; and Prăcko, "The Development," 1968, pp. 8-11. For a short discussion of similar problems during the inter-war period see Faltus, "The Economy," 1968, pp. 200-207.

[16]Pecka and Černý, "Uniform," 1969, pp. 240-246, and Votruba, "Uniform," 1970, pp. 121-134.

[17]Srb, "Program," 1969, pp. 1-4.

times the growth above the lower limit of the range.[18] Establishments are expected to be more concerned about costs now that the tax is being imposed, and therefore to be more hesitant in bringing on new labor at higher than average wages.

The provisions of a law establishing a new Central Population Register contain administrative control functions which could affect the distribution of labor and its free movement. A source describing this register notes that it will provide "not only the number, distribution, and structure of the population, but will also contain demographic characteristics and their changes concerning each individual inhabitant."[19] While some of the functions of the manpower and population registers must still be in the development stage, they are a harbinger of tighter economic and, likely, administrative control.

Among other measures recently introduced are a law setting maximum employment limits for each production branch, a law establishing control over recruitment awards, a measure invoking many elements of a stricter labor discipline, and procedures for giving official encouragement to the recruitment of labor for the preferred branches, such as mining, etc. New efforts have been made to reduce employment in administration by 10 percent through a transfer of about 60,000 persons into production. A decree of the Federal Government (no. 283, of November 19, 1970) extended the work-time fund by abolishing one free Saturday and two Sundays.[20] Another measure has been designed to deal with nonagricultural employment on the collective farms; it appears that in the interbranch competition for scarce labor, many collective farms have been able to attract workers from industry and construction for their subsidiary (nonagricultural) production units by offering higher wages and premiums not available in other branches. These practices were officially termed illegal and in 1969 the district national committees began to investigate them. As a result, 10,400 out of 12,200 workers from Slovakia who had been employed in subsidiary production on collective farms in the Czech Lands were released and transferred to various enterprises throughout the country.[21]

The measures taken by the Czechoslovak authorities with respect to the labor market situation in the country can be grouped under four major headings: (1) Regulations controlling employment at the enterprise and plant level; only establishments considered to be of national importance will be allowed to recruit workers freely; (2) measures designed to reinforce labor discipline, with the aim of reducing absenteeism and turnover, and of making it easier for management to terminate a worker's employment; (3) plans for releasing certain nonessential workers and employees and directing them toward labor-short, "priority" branches; and (4) other measures designed to increase the number of workers in production by encouraging retiring workers in labor-short branches to continue working. New government regulations, effective as of March 1, 1971, allowed many workers of retirement age to accept full wages with little or no loss in their pensions.[22]

The widely reported prevailing apathy of Czechoslovak workers toward their work--with a resulting large number of violations of labor discipline, idleness, absenteeism, and the misuse of worktime--has led some writers to believe that Czechoslovakia has probably the shortest factual workweek in the world.[23] And, it appears that the present Czechoslovak labor market cannot be improved in the short run by passing strict disciplinary or other laws. The nature of the basic difficulties--demographic, economic, and social--is of a long-term duration, which cannot easily be changed by legislation.

C. Sources of data

This report is based largely on official Czechoslovak publications, most of which were issued by the Federal Statistical Office. The agency's name has changed several times since the end of World War II. For the prewar years,

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[18]"The Law," 1969, pp. 451-455. A staff member of the Slovak Ministry of Labor and Social Welfare indicates that this is a provisional measure, but it may be provisional only in the sense that a more comprehensive, definitive law will be adopted at a later time. Hudák, "Wage," 1970, p. 11. Apparently the new law supersedes the earlier Decree, passed in 1966, which in the present situation may have become ineffective. See ibid., and Levčík, Wage, 1969, pp. 66-67.

[19]Srb, "Program," 1969, p. 7.

[20]Hanzlík, "Adjustments," 1970, p. 504; Trend, Czechoslovak, 1970, pp. 5-6; and "Savings," 1971, p. 2.

[21]Trend, Czechoslovak, 1970, pp. 4-5. For a broader discussion of these and related problems, see "Employment," 1970, p. 2; Kruliček, "Undesirable," 1970, pp. 338-342; Suchánek, "Why," 1971, pp. 42-44; and Váně, "Labor," 1969, p. 1.

[22]"A Few Remarks," 1971, p. 125; Klos, "The New," 1971, p. 5; "Regulation," 1971, p. 2; Trend, Czechoslovak, 1970, pp. 8-9; and Vrba, "New," 1971, pp. 94-95.

[23]Jirásek, "An Outline," 1969, p. 6, and "Why Should We," 1970, pp. 26-27.

the population and labor force data are basically from prewar editions of Statistická příručka (Statistical Handbook) or Statistická ročenka (Statistical Yearbook), which contain summary results of the 1921 and 1930 censuses. Except for some summary data released in various yearbooks and periodicals, the detailed results of the 1950 census have never been published, or if published they are not available. Selected results of the 1961 census were published in 11 volumes, 1 for each region (kraj) and a separate volume for the capital city of Prague. In addition, several summary volumes based on the 1961 census were published, of which only one, Vývoj společnosti ČSSR v číslech (Development of the Society of the Czechoslovak Socialist Republic in Figures), is available at this time. The 1966 edition of Demografická příručka (Demographic Handbook) also contains many tables based on the results of various Czechoslovak censuses, primarily that taken in 1961. However, none of the volumes at hand contains satisfactory data on the labor force, especially with respect to its characteristics. For these, numerous other secondary sources had to be consulted.

Starting in 1957, the Federal Statistical Office began to publish statistical yearbooks on a regular basis (the last prewar volume was published in 1938). Except for certain categories of personnel which are excluded from the tabulations, such as those employed by the Ministry of National Defense and the Ministry of Interior, the yearbooks contain extensive statistics on employment in Czechoslovakia, including data by administrative division, class of worker, sector, and branch and subbranch of the economy. The quarterly Demografie (Demography), the monthly Statistika (Statistics), both published by the Federal Statistical Office, and the weekly Hospodářské noviny (Economic News), published by the Central Committee of the Communist Party of Czechoslovakia, also were useful. Indispensible to appendix A, on participants and labor inputs in agriculture, was the monthly, Zemědělská ekonomika (Agricultural Economics), published by the Institute of Scientific-Technological Information of the Ministry of Agriculture, Forestry, and Water Economy. Other important periodicals, either frequently cited in this report or containing articles relating to the population or labor force of Czechoslovakia, are Plánované hospodářství (Planned Economy), Ekonomický časopis (Economic Journal), and Politická ekonomie (Political Economy). Of lesser importance but still frequently consulted were the periodicals Ekonomika zemědělství (Economics of Agriculture), Práce a mzda (Labor and Wages), Nová mysl (New Thought), Ekonomická revue (Economic Review), and Svět hospodářství (Economic World).

D. Manpower concepts and definitions

1. Activity concept of employment.--This term refers to persons engaged in a particular kind of activity, irrespective of the organization or place in which they are employed. Thus, employment in industry based on the activity concept would include all persons in industrial establishments who either participate directly in the production process or direct or service such a process (industrial-production personnel), and all persons engaged in industrial activities carried on in nonindustrial establishments. It would exclude those persons employed in industrial establishments who render services to other personnel but do not participate directly in the production process (nonindustrial personnel). In this report, statistics on employment by branch of the economy are based on the activity concept; data for wageworkers by branch of industry are based on the establishment concept. See also entries nos. 7, 10, 13, and 18.

2. Apprentices.--These are persons being trained for wageworker occupations either in factory schools for apprentices or in other individual or collective forms of factory training. This category may also include older persons who are being retrained for new occupations. University students and students of specialized secondary schools who work at factories to acquire experience are not included among apprentices (they are excluded from all categories of personnel of record). Also excluded from this category are probationary personnel who are being trained for technical and administrative positions; they are included among engineering-technical personnel or among salaried employees, depending on their jobs, at the start of their training. In current statistical practice, apprentices are not included in total personnel of record except those who are trained at the machine and tractor stations. However, the yearbooks contain data on apprentices enrolled in various training schools by the field of training, but they are listed separately from employment statistics.

3. Auxiliary service personnel.--This term refers to persons performing duties in the nonproductive facilities or sections of an establishment, such as messengers, doorkeepers, the char force, chauffeurs, cloakroom attendants, etc. Personnel in this category are classified separately from wageworkers because their work is not directly related to basic production and their average wage is lower than that of wageworkers.

4. Economically active population.--No concrete information on the exact definition of the economically active population in any of the

Czechoslovak censuses is available. The coverage of the prewar censuses can be deduced from the published results, but that of the postwar censuses can only be approximated from the discussions scattered in various publications. Based on these sources, it can be inferred that the coverage of the 1950 census included all gainfully employed persons, i.e., workers and employees, cooperative farmers, and the self employed; armed and security forces; home workers; helping family members; apprentices; employed prisoners; and persons temporarily unemployed. The inclusion of helping family members was based on the criterion that they had worked at least one-fourth of the customary annual work-time. The coverages of the two prewar censuses have been adjusted to approximate the coverage of the 1950 census by subtracting from the data on the economically active population the categories of rentiers, pensioners, and students living away from their parents. It seems that the 1961 census excluded apprentices from the economically active population and the coverage of helping family members was narrower than in the 1950 census. In addition, the branch of economy classification in the 1950 census was based on the technical unit of production or services (the smallest unit engaged in particular type of activity), whereas the classification in the 1961 census was based on the local administrative (economic) unit, which was classified according to its predominant activity. Little information is available from the 1970 census but it appears that its coverage of the economically active population was even more restricted than that of the 1961 census, probably leaving out the armed and security forces and all helping family members. In all of these censuses the economically active population apparently includes all persons who meet the given criteria, regardless of age.

5. Employment (employed population, annual average employment, reported employed).--These terms are used interchangeably here and refer to the personnel of record (see entry no. 15). Employment statistics may be either compiled as of a certain date or computed as averages. The number of personnel as of a certain date is used in labor force balances because it gives the number of persons actually employed in an establishment at that time; it is also used in analyses of the composition of the labor force because average numbers of the different categories of personnel are computed differently and, therefore, are not strictly comparable. Annual average employment is used primarily for planning purposes and analyses of labor force utilization because it indicates the trend of employment and the amount of time actually worked over a time period more correctly and realistically than other measures; it also presents a better picture of the wage funds spent and of the volume of output produced. Annual average employment is, therefore, used to compute such derivative statistical measures as average wages and productivity of labor.

The average number is computed differently for wageworkers (see item 18), including probably other manual workers, and for other employment categories. The monthly average for wageworkers is derived as a sum of the numbers of workers of record on each calendar day of the month, divided by the total number of days in the month. Sundays and holidays are counted as having the same numbers of workers as were recorded on the days immediately preceding them. If an establishment operated only during part of a particular month, the average is computed as the sum of the daily numbers for that part of the month during which the establishment actually operated, divided by the total number of calendar days in that month. The annual average number of wageworkers is simply an arithmetic average of the monthly averages in that year. The monthly average number of the other (nonmanual) classes of worker is derived, as a rule, by averaging their numbers on the first and last day of the month. The average for periods longer than one month is computed as an average of the numbers at the first of each month plus the number at the end of the last month of the period.

The employment data published annually by the Federal Statistical Office exclude persons working for the Ministries of National Defense and Interior, as well as other "unplanned" categories. They also leave out certain helping family members, a numerically important category in agriculture, and apprentices. Reported employment statistics have been adjusted in appendix A to include some of these categories whenever possible or necessary.

6. Engineering-technical personnel.--This term includes all personnel engaged in the organization or direction of the production process. It also includes personnel performing technical services for the production process, either directly or indirectly, who do not work manually. This is a functional (occupational) rather than a professional (educational) category and, as such, it includes all persons who perform duties of an engineer or a technician (down to the nonworking foreman), regardless of the level of their education. On the other hand, a graduate engineer or technician who holds a clerical, accounting, or similar job would be included in the category of salaried employees, rather than in the category of engineering-technical personnel.

7. Establishment concept of employment.--This term refers to all persons employed in a particular type of establishment, irrespective of the activity in which they are engaged. Thus, employment in industry based on the establishment concept of employment would include all persons employed in industrial establishments (nonindustrial personnel as well as industrial-production personnel), but it would exclude persons engaged in industrial activities carried on within nonindustrial establishments. See also entries nos. 1, 10, and 13.

8. Factory guards and firemen.--These occupations are classified separately from auxiliary service personnel because of their special duties and because their wage scale is somewhat higher.

9. Helping family members.--This is a category of employment which at present can be found only in the cooperative and private sectors of agriculture. In the cooperative sector it comprises those members of collective farms, including persons in their families, whose main occupation is off the collective farm or who have no permanent job and whose work on the collective farm in a given year yielded at least 50 labor-days but fell short of the minimum number of labor-days (see entry no. 11) required for classification as permanently active farmers. This may appear to be a simple and clear definition, but actually it is not. For example, the required minimum number of labor-days, at least until 1964, was not the same on all collective farms. Furthermore, the work norms on which labor-days are based may differ from one farm to another, thus resulting in a different number of labor-days earned on different farms for essentially the same quality and quantity of work performed. In the private sector, the definition of helping family members has changed several times, but since 1959 it seems to include family members who are paid for their help as well as helpers who are not family members and conversely family members who help on farms other than their own.

10. Industrial-production personnel.--This term refers to one of the two basic categories of personnel of record in industry (see entry no. 15), the other being nonindustrial personnel. It consists of those persons who either directly participate in the production process, or direct or service such a process. Specifically, industrial-production personnel are composed of the following functional categories: (a) Personnel of the basic shops and personnel of shops utilizing waste materials; (b) personnel of the auxiliary shops, such as the power plant, current repair shop, mechanical and other shops which serve basic production (including installation personnel installing equipment for the customer at the customer's site), and personnel of intra-plant transportation units; (c) personnel of the secondary and subsidiary shops, such as those engaged in the extraction of coal, peat, and wood, and personnel of shops producing packaging materials, brick kilns, etc.; (d) members of factory (or plant) guard units and professional firemen; (e) administrative personnel of all departments and offices; (f) personnel servicing the plant's shower and bath equipment and personnel of the plant's laundry and work-clothes wash-and-repair shops; (g) personnel of the plant's laboratories serving the production needs of the establishment; and (h) personnel engaged in experimental and scientific research directly related to the establishment's production.

Personnel engaged in the current repair of machinery and equipment of an establishment are included among the industrial-production personnel, regardless of the shop which carries out these repairs. Personnel of the capital repair unit are excluded from the industrial-production personnel of the establishment if the value of such repair is excluded from the gross value of the establishment's output and vice versa.

Industrial-production personnel are classified by six employment categories, according to their functional participation in the production process, as follows: (a) Wageworkers; (b) engineering-technical personnel; (c) salaried employees; (d) auxiliary service personnel; (e) factory guards and firemen; and (f) apprentices. See also entries nos. 2, 3, 6, 8, 13, 17, and 18.

11. Labor-day (pracovní jednotka).--This is a unit of work measure on collective farms which primarily determines the amount of remuneration. It is also used as the basis for determining whether a person is counted as permanently active or as a helping family member. The number of labor-days a person can earn depends not so much on the number of calendar days worked as on the quantity and quality of labor performed. A day's or a shift's work on a collective farm is measured according to its complexity and difficulty by one of seven coefficients, which range as follows:

1	2	3	4	5	6	7
0.50	0.75	1.00	1.25	1.50	1.75	2.00

In computing the numbers of labor-days earned, these coefficients are used as multiplicands and the percentages of fulfillment as multipliers. If, for example, a collective farmer completed 100 percent of his daily assignment, which was clas-si-

fied in the second category, he would earn 3/4 of a labor-day for his work. But if another collective farmer completed 130 percent of his assignment, which was classified in the seventh category, he would earn 2.60 labor-days (2.00 x 1.30). Obviously, the range of labor-days a farmer can earn in one calendar day is considerable.

12. Labor force (manpower).--These general terms have been used interchangeably in this report, sometimes to refer to reported employment and at other times to the economically active population.

13. Nonindustrial personnel.--This is the second of the two broad employment groups into which all personnel of record in an industrial establishment are divided. It consists of those persons who do not participate directly in the production process but who render services to the establishment's personnel. These persons are not classified by class of worker, as are industrial-production personnel, but by the branches of the economy which correspond to their activities. They are paid from assigned funds which are kept separate from the funds for industrial-production personnel. Specifically, nonindustrial personnel include: (a) Personnel of freight transportation belonging to an industrial establishment but engaged in work, primarily or exclusively, outside of the establishment for a customer; (b) personnel of medical and health units, kindergartens, children's homes, and such facilities as bath houses, laundries, barber shops, eating halls, and clubs, as well as personnel employed in the housing economy of the establishment; (c) administrative and teaching personnel of educational facilities organized at the establishment; (d) personnel of the independent units engaged in scientific-research work not directly related to the establishment's production; (e) personnel of stores which are under the establishment's administration; (f) personnel of the livestock raising, farming, and forestry units belonging to the establishment; (g) personnel employed in telecommunication facilities serving the establishment's needs (telephone exchanges, intraestablishment broadcasting, etc.); (h) personnel of such secondary-production units attached to the establishment which produce or extract material or fuel needed by the establishment but not included in its gross value of output (persons employed in the establishment's coal mines, quarries, etc.); and (i) personnel of the construction unit of the establishment, regardless of whether this activity is included in the basic activities of the establishment or is carried on a separate account.

14. Permanently active persons.--This term is usually used in agriculture only and roughly corresponds to the personnel of record in the nonagricultural branches. As a rule, this category is used as the basis to determine the trend of the country's agricultural employment and to compute such indicators as the productivity of labor or the number of workers per hectare of land. It is defined for each sector as follows:

a. In the state sector, it includes all wageworkers, salaried employees, engineering-technical personnel, auxiliary service personnel, guards, and firemen employed on state farms and in other agricultural establishments centrally directed by the Ministries of Agriculture, Forestry, and Water Economy; Food Industry; Education and Culture; and Fuels and Energy.

b. In the cooperative sector, it includes members of collective farms and persons in their families whose only or main occupation is work on the collective farm and who earn at least 240 labor-days per year, or, if they work exclusively in crop growing, at least 130 labor-days, and permanently hired personnel. The category also includes those collective farmers who, because of temporary disability, such as illness, accident, or pregnancy, could not accumulate the required minimum number of labor-days in a particular year. Collective farm work is defined as the only occupation if a collective farmer, or a working member of his family, has no other employment; main occupation is defined as that which consumes most of the person's worktime (rather than that from which he derives most income) during a year.

c. In the private sector, it includes independent farmers 18 years old and over and members of their families 15 years old (until 1960, 14 years old) and over whose sole or main occupation (source of livelihood) is work in agriculture. Retired family relatives, pensioners, housewives, etc., are included in this sector if they work permanently or consistently in agriculture. Before the advent of collectivization the private sector also included workers and employees hired for an indefinite (permanent) period of time, but the number of these persons has been practically zero since 1959.

15. Personnel of record.--This term refers to persons on the payroll of a nonagricultural establishment, including those hired on a probationary basis from their first day of work. It apparently relates only to the socialist sector of the economy, and specifically includes the following: (a) Personnel present at work, whether actually working or idle; (b) personnel away on official business, annual leave, sick or maternity leave, special unpaid vacation permitted by management, etc.; (c) personnel expected but not appearing for work because of illness, etc.; (d)

personnel away at military exercises (maneuvers); (e) personnel assigned to perform agricultural, forestry, and other work outside the establishment if they are paid, in full or in part, from the wage funds of the establishment which made the assignment, without any outside reimbursement to that establishment; (f) personnel on a short-term study or examination leave, taken for the purpose of increasing their job qualifications; (g) home workers engaged in the production of articles from material supplied by the establishment; and (h) personnel paid by the establishment who were hired for a temporary period (1-5 days), including members of labor brigades, if such personnel contribute to the establishment's output and were not hired to perform only incidental chores (repair of furniture, painting, moving, cleaning of yard, etc.).

Personnel of record include not only all persons who are in a training or a permanent, seasonal, or temporary work relationship with the establishment (with the exceptions listed below), but also such personnel as members of the labor brigades, army units helping in the mines, and prisoners assigned to work in the establishment.

The following employment categories are specifically excluded: (a) Personnel absent for basic military training; (b) personnel released to perform permanent public functions; (c) personnel sent to schools who do not receive wages or salaries from their employer; (d) personnel transferred to work in another establishment who are also paid there; and (e) students present in the establishment for the purpose of gaining operational or other experience. See also entries nos. 5, 10, and 13.

16. Population of working age (able-bodied population).--This term is defined in Czechoslovakia as 15 to 59 years for males and 15 to 54 years for females. The lower limit reflects the age at which both boys and girls normally finish their compulsory schooling; the upper limits indicate the respective ages at which men or women become eligible for pensions.

17. Salaried employees.--This term refers to administrative and other salaried personnel not directly connected with the production process, such as the personnel of the procurement, sales, storage, and finance departments; record-keeping and accounting personnel; lawyers; etc.

18. Wageworkers.--Numerically, this is the most important class-of-worker category in an establishment. Wageworkers include production line workers as well as those engaged in the relocation, storage, and maintenance of raw and other materials, semiproducts, and finished products; personnel engaged in the repair and checking of working eqquipment; and personnel whose activities comprise a combination of instruction (direction, demonstration) and physical work (e.g., working foreman).

II. Labor Resources

A. Total population

1. Total

Czechoslovakia had a population of 14,467,000 on July 1, 1970, an increase of 813,000, or 6 percent, over the total as of 1960 (table II).[1] The average annual rate of growth during the sixties was 0.6 percent, down sharply from the relatively high annual rate of 1.0 percent during the 1950's, but closer to the level of 0.5 percent for the years 1930-37 and 0.8 percent for the years 1921-30. Between 1945 and 1950, the total population of Czechoslovakia decreased by nearly 1.8 million, the net result of the expulsion of about 3 million Sudeten Germans, a small exchange of persons with Hungary, a loss due to net emigration, and a sizable natural increase.[2]

As in the other countries of Eastern Europe, population growth in Czechoslovakia was strongly affected by the two World Wars and the economic depression of the 1930's. According to estimates made for the Czech Lands by one Czechoslovak writer, civilian and military losses during World War I numbered 175,000; birth deficits during the war totalled 527,000 and during the 1930's they amounted to 264,000.[3] Comparable data are not available for Slovakia. War-related deaths during World War II for all of Czechoslovakia have been estimated at 220,000, of which 195,000 died in concentration camps.[4]

Natural increase in Czechoslovakia prior to World War II and since 1950 can be generally characterized by declining birth and death rates. Between 1921 and 1937, the crude birth rate dropped by 43 percent, from 28.7 to 16.3 per 1,000 population. After a rapid postwar rise, it again fell from 23.3 per 1,000 population in 1950 to 14.9 in 1968, with slight upturns during the early sixties and in 1969 and 1970. The crude death rate declined fairly steadily from 17.3 per 1,000 population in 1921 to 9.6 in 1955. It remained around that level during the next 10 years, and has been increasing slightly each of the last 4 years (table II).[5]

Patterns of population growth in the two major regions of the country, the Czech Lands and Slovakia, have been broadly similar to that for the whole country, but both the levels and the rates of change have varied considerably. Thus, the average annual rate of population growth in the Czech Lands was 0.7 percent in the 1920's; it dropped to 0.3 percent between 1930 and 1937, rose to 0.8 percent in the 1950's, and dropped to 0.3 percent again in the 1960's. On the other hand, the rate of population growth in Slovakia was 1.1 percent in the 1920's, 0.9 percent between 1930 and 1937, 1.4 percent in the fifties, and 1.3 percent in the sixties. As a consequence of these differential rates of growth, as well as the loss of the German population from the Czech Lands, the population of Slovakia increased from 23 percent

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[1] Preliminary figures of the 1970 census reported in the first volume of census results indicate that as of December 1, 1970, the total population was 14,362,000, or 133,000 less than the official estimates of 14,495,000 reported for November 30, 1970. The midyear figure used in this report, which is consistent with this latter total, is thus probably about 0.9 percent too high. Details of the age-sex structure of the population as of the census date have not been published, and the official estimates have been used in this report--both for population figures during the 1960's and as a basis for population projections. See Federální, Předběžné, 1971, p. 11, "Preliminary," 1971, pp. 1 and 2, and Stat. přeh., no. 2, 1971, p. 40.

[2] Ypsilantis, The Labor, 1960, p. 3. None of these figures include the population of Sub-Carpathian Ruthenia, which was ceded to the U.S.S.R. in 1945.

[3] Kochanovskov, "Estimated," 1960, pp. 114-118. Birth deficits due to the depression were more severe in industrialized Bohemia and Moravia than in predominantly agricultural Slovakia.

[4] Ibid., p. 118. These losses presumably exclude deaths to the German residents of Czechoslovakia serving in the German armed forces. Military losses are given as 200,000 and total war losses as 415,000 by Frumkin, Population, 1951, p. 170.

[5] For a comparison of the population changes in Czechoslovakia with those of other countries in Eastern Europe during these years, see Myers, "Demographic," 1970, pp. 70-99.

of the total for Czechoslovakia in 1921 to 28 percent in 1950 and 31 percent in 1970.[6]

The birth rate has declined much faster in Slovakia than in the Czech Lands since 1921. In that year it was 38.2 per 1,000 population in Slovakia, nearly half again as high as the rate of 25.7 in the Czech Lands; by 1970 the rate in Slovakia was 17.9, only 19 percent above the rate of 15.1 in the Czech Lands. Between 1921 and 1950 the birth rate declined by 25 percent in Slovakia and by 18 percent in the Czech Lands. During the 1950's the pattern of decline shifted and the birth rate in 1960 was 37 percent lower in the Czech Lands and 23 percent lower in Slovakia than it was 10 years earlier. During the 1960's, the rate increased in the Czech Lands by 14 percent and continued its trend in Slovakia, declining by an additional 19 percent in the 10 years. A better measure of the actual fertility levels, the gross reproduction rate,[7] shows, however, that the differential drops in the crude birth rate since 1950 have been due partially to changing age structures of women in the two regions. The gross reproduction rates for selected years are as follows:

Year	Czech Lands	Slovakia
1949/51.....	134.7	169.0
1960.....	101.2	148.9
1965.....	105.6	135.8
1970.....	93.0	119.0

Source:
1970: Demografie, no. 2, 1971, p. 181.
Other years: Stat. roč. 1970, p. 98.

Thus, whereas the crude birth rate declined by 28 percent in the Czech Lands and by 38 percent in Slovakia between 1950 and 1970, the declines in the gross reproduction rates were almost the same--31.0 percent in the Czech Lands and 29.6 percent in Slovakia. Fertility in Slovakia in 1970 was still 28 percent higher than in the Czech Lands, an even larger differential than the 25 percent prevailing in 1949/51.

[6]These regional totals include children and survivors of the net numbers of migrants from Slovakia to the Czech Lands since the end of World War II, which are as follows: 1945-49, 218,000; 1950-59, 92,000; and 1960-69, 68,000. Kochanovskov, "Estimated," 1960, p. 119; Stat. roč. 1960, p. 85; Stat. roč. 1965, p. 116; and Stat. roč. 1970, p. 110.

[7]The gross reproduction rate may be defined as the number of females that would be born to 100 women during their reproductive lifetimes if a given set of age-specific birth rates prevailed throughout the period.

The pattern of change in the death rate in the two regions has differed from that in the birth rate. In 1921 the death rate in Slovakia was 21.1 per 1,000 population, 31 percent above the rate of 16.1 in the Czech Lands. By 1950 the Slovak rate had fallen below the Czech rate, and since 1952 it has been consistently lower, due partially to the younger age structure and partially to lower age-specific death rates in Slovakia. In 1968, the death rate of Slovak males would have increased from 9.3 per 1,000 to 10.9 had they the same age structure as males in the Czech Lands. The death rate of Slovak females would have increased from 7.7 per 1,000 to 10.2 had they the same age structure as females in the Czech Lands. Even these latter, standardized, death rates, however, were 14 percent lower for Slovak males and 5 percent lower for Slovak females than the rates in the Czech Lands. Crude death rates in both regions reached a low point in the early 1960's and have generally been rising since. In the Czech Lands the 20 percent rise between 1960 and 1968 was due in almost equal parts to a change in the age structure and to higher mortality levels. In Slovakia, the 8 percent rise during the same period was due entirely to a change in the age structure. In fact, had Slovakia the same age structure in 1968 as it had in 1960, the crude death rate would have been 7.6 per 1,000 in 1968 or 0.3 per 1,000 lower than in 1960 and 0.9 per 1,000 lower than it actually was in 1968.

2. Age-Sex Structure

Changes in the age and sex composition of the Czechoslovak population between 1921 and 1970 reflect the above-mentioned trends in birth and death rates and losses due to war and migration. The proportion of the population under 15 years of age dropped until 1950, increased by 1961, and then decreased sharply by 1970. The proportion of the total population in the working ages (males 15 to 59 years of age, females 15 to 54 years) has varied only slightly over the 49-year period. During the 1960's, the number of both males and females in the working ages increased by nearly 8 percent, but as a proportion of total population in each sex group the working ages increased only from 59.6 to 61.1 percent for males and from 52.2 to 53.0 percent for females. At the older ages steady increases in numbers and proportions have been registered (table III). As a consequence, the dependency ratio (number of persons outside the working ages per 1,000 persons in the working ages) for the country, which dropped from 682 in 1921 to 661 in 1950, rose to 791 in 1961 and then dropped again to 755 in 1970. Changes in the age-sex structure within each of the two major regions during the years 1921-61 broadly followed the pattern of change in the country as a whole, although again the levels and rates of change varied substantially.

The sex ratio of the total population rose from 92.8 males per 100 females in 1921 to 95.2 in 1961 and remained at that level in 1970:

Year	Czecho-slovakia	Czech Lands	Slovakia
1921.....	92.8	92.3	94.7
1950.....	94.6	94.7	94.4
1961.....	95.2	94.1	97.8
1970.....	95.2	(NA)	(NA)

NA Not available.
Source: Table III.

In the Czech Lands the sex ratio declined slightly from 1950 to 1961, due primarily to the decrease in the number of births, where males predominate. In Slovakia, because of a much higher birth rate, the sex ratio increased during this period.

The age-sex structure of the population within the various regions and subregions is of particular importance in Czechoslovakia, where areas with employment opportunities are often located long distances from areas with a potential surplus of working-age population, and the majority of internal migrants is therefore comprised of persons within the working ages.[8] Since internal migration has been primarily to large cities and industrial centers, these are the areas which have above-average proportions of working-age population. Compared with the national figure of 59 percent, the proportions of the total population in the 15 to 59 year age group in the five largest cities in Czechoslovakia in 1961 were 64 percent in Prague, 63 percent in Brno and Ostrava, and 62 percent in Plzeň and Bratislava.[9] Given the continued migration to urban areas during the sixties, data from the population census taken in December 1970 probably will indicate even higher proportions of working-age population in these cities.

As in the case of the largest cities, highly industrial and industrial districts had above-average proportions of working-age population in 1961. On the other hand, agricultural districts had the highest proportion of under-age and the lowest proportion of over-age population. "Mixed" districts had the highest proportion of over-age population (table 2).[10]

Table 2. PERCENT DISTRIBUTION OF THE POPULATION, BY AGE AND TYPE OF DISTRICT: MARCH 1, 1961

Type of district	All ages	0 to 14	15 to 59	60 and over
Highly industrial....	100.0	25.7	61.1	13.2
Industrial.....	100.0	26.3	59.7	14.0
Mixed.....	100.0	27.2	57.9	14.9
Agricultural.....	100.0	30.7	57.2	12.1

Source: Jureček, "Regional," 1963, p. 10.

Compared with the national average, highly industrial and industrial districts in 1961 had "surpluses" of 53,000 and 36,000 persons aged 15 to 59 years; conversely, mixed and agricultural districts had "shortages" of 42,000 and 47,000 persons.[11]

With few exceptions, districts which had higher proportions of older populations also had higher proportions of females, and districts with higher proportions of children had lower proportions of females. As of 1961, there were 1,062 females per 1,000 males in the Czech Lands but only 1,022 in Slovakia (table III). On the level of individual districts, the range was wide, varying from 1,181 females per 1,000 males in one of the Prague districts to 967 in the Slovak district of Dunajská Streda (which is by far the most agricultural district in the whole country). As could be expected, the lowest proportion of children was

[8]For a discussion of the motives for internal migration in Czechoslovakia in recent years, see Srb, "Motives," 1969, pp. 237-247. Extensive data are appended to the article.

[9]Jureček, "Regional," 1963, p. 10.

[10]Of the total of 109 districts in the country in 1961, 76 were in the Czech Lands and 33 in Slovakia. Of the Czech districts, 17 were classified as highly industrial, 26 as industrial, 26 as mixed, and seven as agricultural. In Slovakia, no district was classified as highly industrial, nine were classified as industrial, seven as mixed and 17 as agricultural. Classification of the districts into one of four categories was based on ratios of the number of persons permanently active in agriculture to the number of personnel in industrial establishments expressed in hundreds. Districts with values under 35 were classified as highly industrial; those with values between 35 and 78 (national average) were classified as industrial; those between 78 and 150 as mixed; and all above 150 as agricultural. Six districts (including the capital city of Prague and the Slovak capital of Bratislava) with a value of under 35 were listed as industrial rather than highly industrial, apparently because of large numbers of persons employed outside of agriculture and industry. See Andrle, "On Questions," 1962, pp. 6-7.

[11]All data on the age structure of the population by the four district categories refer to the de jure population; the differences noted would probably be greater if the de facto population was used. See Jureček, "Regional," 1963, pp. 10-11.

also found in one of the Prague districts (18.0 percent), and at the other extreme, the eastern Slovak district of Poprad had twice as high a proportion (36.8 percent).[12]

Present and future employment opportunities in the industrial centers of Bohemia and Moravia, as well as in the new industries within Slovakia, will tend to attract more migrants and long-distance commuters (who go home on weekends or even at less frequent intervals) from the relatively labor-rich areas in Slovakia. Consequently, the age imbalance of the population in 1961 between the predominantly industrial and predominantly agricultural districts will most likely be preserved, or even aggravated.[13]

B. Economically active population

1. Total

The term "economically active population" has not been clearly defined in available Czechoslovak publications. Generally, it covers all gainfully employed persons, irrespective of age, including the armed and security forces, persons employed in confidential categories, home workers, the self-employed, employed prisoners, and persons temporarily unemployed (although not so identified). Apprentices apparently were excluded from the economically active population in the 1961 census, in contrast to the practice in previous censuses.[14] Helping family members, an important employment category in Czechoslovak agriculture, were only partially covered in the 1961 census, but probably fully counted in earlier censuses. Thus the data presented here on the economically active population are not fully comparable among the various censuses (see chapter I).

As of July 1, 1970, the economically active population in Czechoslovakia amounted to an estimated 7,223,000, representing 49.9 percent of the total population and 87.6 percent of the population of working age (table 3).[15] The number of persons economically active as a proportion of both the total and working-age population has increased steadily since 1921, due almost solely to the increased participation of women. Thus, the ratio of the number of economically active men to the number of men of working age has remained at about the same level of 95 to 97 per 100 during this half century, but the ratios for women have increased from 49 per 100 in 1921 to 61 in 1950, to 72 in 1961, and to 78 in 1970. Of the total increase of 1,619,000 in the economically active population between 1921 and 1970, women accounted for 1,122,000, or 69 percent.

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[12] Ibid., pp. 13-15.

[13] As of 1961, about 40 percent of the workers and employees in the Czech Lands and about 53 percent in Slovakia commuted to work. The number of commuters from Slovakia to the Czech Lands was given as 88,000; the number of commuters in the opposite direction was only 6,000. Commuters are defined as those persons whose jobs are located outside the administrative boundaries of their permanent residences. See Ústřední, Vývoj, 1965, p. 84.

[14] See Stat. přír., IV, 1932, pp. 14-15; Stat. roč. 1936, pp. 11-17; Fajfr, Jureček, and Ullmann, Sčítání, 1960, pp. 43-75; Jureček and Ullmann, "Age," 1963, pp. 439-441; Marček et al., Polstoročie, 1969, pp. 61-66; and International Labour Office, Year Book 1970, pp. 126-127.

[15] The preliminary census figure reported for the economically active population is 6,952,000. This is 271,000 less than the estimate of 7,223,000 given in this report as of July 1, 1970, and even lower than the 1970 annual average employment figure of 7,006,000 (Stat. přeh., no. 3, 1971, p.68). It thus appears obvious that the definition of economically active used in the 1970 census was changed from that used in earlier censuses, and since neither the definition nor a distribution by branch have been reported for the census figure the estimated total has been used here. A comparison of data on the economically active population reported for the census with estimates given in this report and annual average employment for 1969 is shown in the following table.

Branch	Economically active population		Annual average employment as reported for 1969
	According to the census of December 1, 1970	As estimated for July 1, 1970	
	(1)	(2)	(3)
Total....	[1]6,952,000	7,223,000	6,916,000
Agricultural.	[1]914,000	[2]1,266,000 [3]1,371,000	[2]1,192,000 [3]1,296,000
Nonagricultural....	[1]6,038,000	[2]5,852,000 [3]5,957,000	[2]5,620,000 [3]5,724,000

[1] It is not clear whether forestry is included or not.
[2] Excluding forestry.
[3] Including forestry.

Source:
Column 1: Federální, Předběžné, 1971, p. 54.
Column 2: Table 4 and Stat. roč. 1970, p. 119.
Column 3: Stat. roč. 1970, p. 119.

Table 3. ECONOMICALLY ACTIVE POPULATION, BY SEX: 1921 TO 1970

(Absolute numbers in thousands. Figures may not add to totals due to rounding)

Year and sex	Economically active population		
	Total	Percent of total population	Percent of working-age population
BOTH SEXES			
1921.....	5,604	43.1	72.5
1930.....	6,519	46.6	(NA)
1950.....	5,812	47.1	78.2
1961.....	6,483	47.2	84.5
1970.....	7,223	49.9	87.6
MALE			
1921.....	3,680	58.8	96.5
1930.....	4,488	66.1	(NA)
1950.....	3,568	59.5	94.5
1961.....	3,823	57.0	95.6
1970.....	4,177	59.2	96.8
FEMALE			
1921.....	1,924	28.5	49.1
1930.....	2,031	28.1	(NA)
1950.....	2,244	35.4	61.4
1961.....	2,660	37.8	72.3
1970.....	3,046	41.1	77.5

NA Not available.

Source: Table IV.

Data for the Czech Lands and Slovakia through 1961 show varying patterns of change. Thus, trends in the Czech Lands generally are close to those for the whole country, but in Slovakia the level of female participation climbed much more rapidly than the national rate between 1921 and 1961, while male participation declined (table IV). During the 1950's the level of participation of both sexes dropped in Slovakia, with females dropping very sharply from 74.0 to 57.9 percent of the working-age population, primarily because of the advent of collectivization and different methods for classifying employment in agriculture (see appendix A). The decline in numbers of persons economically active in the country and in the Czech Lands between 1930 and 1950 was due to the deportation of Sudeten Germans in the mid-1940's.

2. Age-Sex Structure

Of the 7.2 million economically active persons in Czechoslovaka in 1970, nearly 4.2 million, or 58 percent, were men (tables 3 and IV). The proportion of men in the economically active population, which was 66 percent in 1921, rose to nearly 69 percent in 1930 but has declined steadily since. The proportion of the total male population which participated in the labor force also increased between 1921 and 1930; subsequently it dropped steadily to 57 percent by 1961, and climbed slightly to over 59 percent in 1970. Trends in the number of economically active males as a proportion of all men in the working ages have followed much the same pattern. As noted earlier, trends in the levels of female participation in the labor force have been generally the opposite of those for males. Thus, the complementary proportion of women in the economically active population rose from 34 percent in 1921 to 42 percent in 1970. And as a proportion of all women in the working ages, the economically active increased by more than half--from 49 percent in 1921 to over 77 percent in 1970.

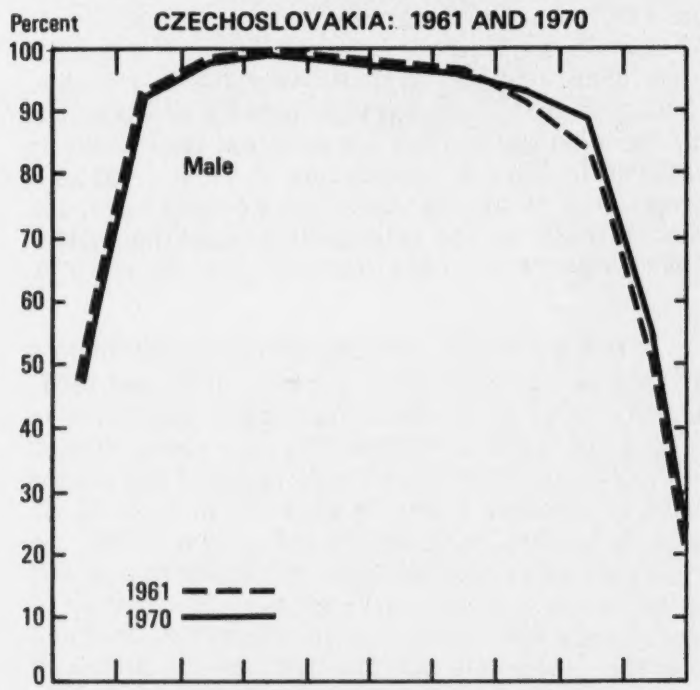
In the Czech Lands, the level of participation for males changed little between 1921 and 1961, but the level for females increased, particularly during the 1950's. In Slovakia, the share of men in the economically active population of that region dropped sharply from 74 percent in 1921 to 57 percent in 1950, but rose to 64 percent in 1961. As a proportion of both the total number of males and of the number in the working ages, the number of Slovak men who were economically active declined slightly. Overall participation rates of Slovak females more than doubled between 1921 and 1950, from 20 to 42 percent, but dropped off sharply during the 1950's as a result of the collectivization drive and changes in classification procedures regarding helping family members. In the Czech Lands, 34 percent of all economically active women in 1950 were classified as helping family members; in Slovakia, the proportion was 62 percent. As a result of the rapid progress in collectivization during the 1950's, the number of helping family members was forced to decline.[16] While the bulk of female helping family members in Bohemia and Moravia either became members of a collective farm or found jobs in other branches of the economy, most of such women in Slovakia withdrew from full, formal employment and apparently were not counted as economically active in the 1961 census. Consequently, only 43,000 persons were counted as helping family members in agriculture in that census, of which 32,000 were women. No regional breakdown of these figures is available.

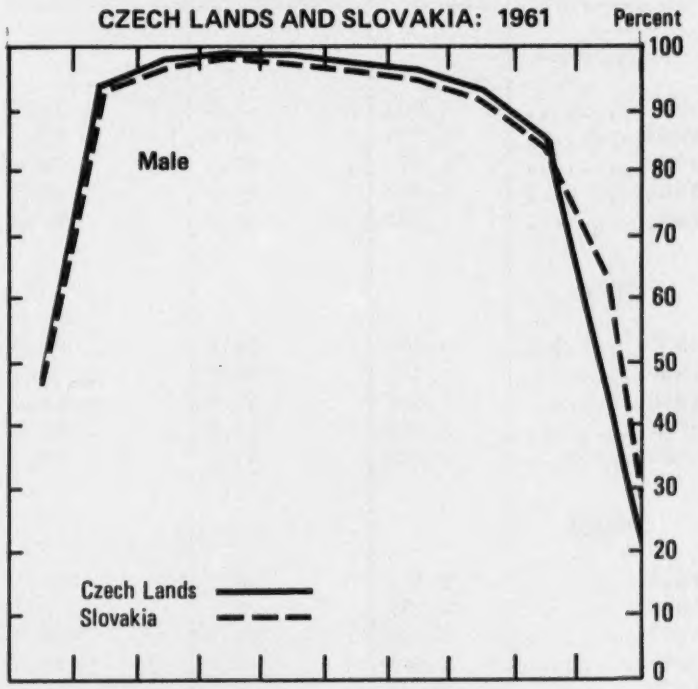
Labor force participation rates (LFPR's) by age and sex for the years 1950, 1961, and 1970 are shown in table V and figure 1. The rates for

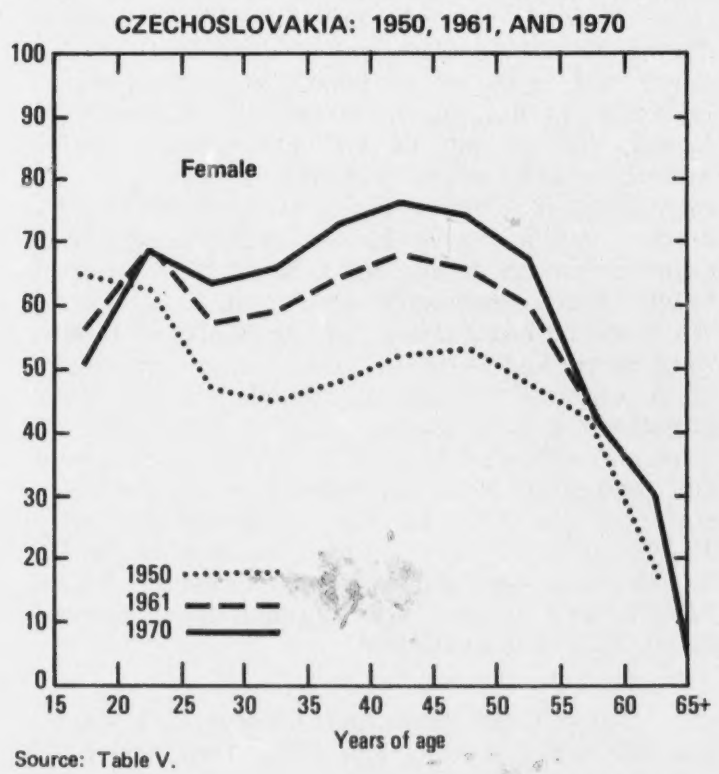
[16] See Jurecek and Ullmann, "Age," 1963, pp.439-441.

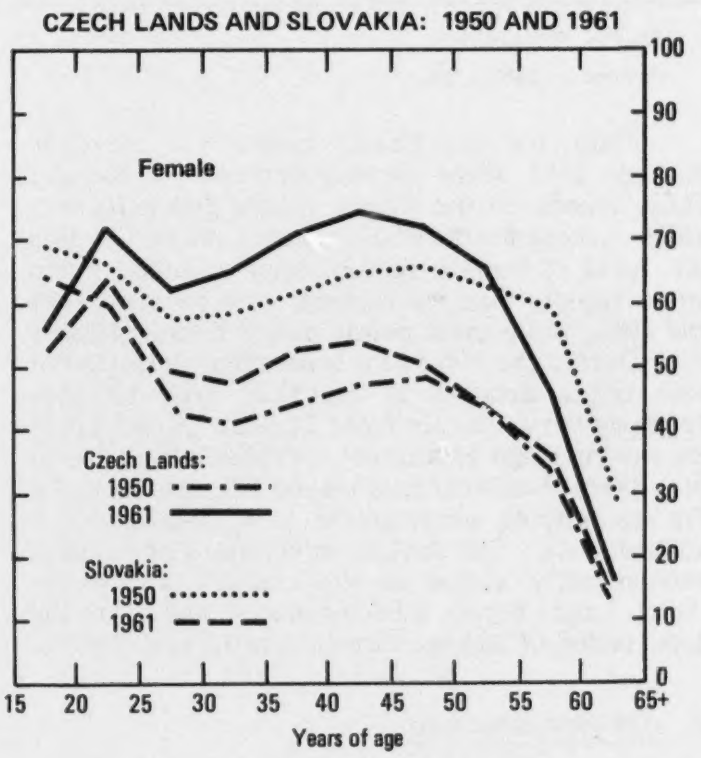
1970, both male and female, have been estimated, as described in the source note to the table, and are therefore much less reliable than the rates for 1950 and 1961 which are based on census results. The 1970 rates are believed to represent the general trends in age- and sex-specific participation, however, and to be suitable as the basis for general comparisons here.

Figure 1.--Labor Force Participation Rates, by Age, Sex, and Region: 1950, 1961, and 1970









Source: Table V.

Overall, rates for males have changed little since 1950. Reported rates for those aged 15 to 19 dropped by more than one-third between 1950 and 1961, however, largely because of increased full-time attendance in general secondary and vocational schools. Rates at the older end of the working ages are believed to have increased somewhat as a result of the tight labor supply in the 1960's, and the constant level of the rate for men aged 65 years and over from 1950 to 1961 has been assumed to have continued to 1970--despite the increased availability of pensions. As figure 1 shows clearly, LFPR's for males in the Czech Lands and Slovakia in 1961 were generally similar; rates in the Czech Lands were slightly higher in the ages 20 to 54 years and somewhat lower in the younger and older ages. The Slovak rate in the age group 60 to 64 was significantly higher, a result probably of a greater proportion of older peasants working on private farms.

In contrast to the trends in the male LFPR's, the level of female participation in nearly all age groups increased significantly between 1950 and 1970. The proportion of women in the age group 15 to 19 who were economically active dropped sharply, due to increased enrollment in full-time secondary and vocational schools, a decline in the age of marriage, and decreased employment as a helping family member in agriculture. LFPR's of females in ages 60 to 64 and 65 years and over apparently changed little during these years, but rates in the prime working ages rose markedly. Newly opened job opportunities for women in such fields as education, health, transportation, trade, and industry, where employment is more formal and profitable than in agriculture, basically accounted for this rising employment of women.

The participation rates of women in the Czech Lands show in general a very steep rise between 1950 and 1961. Even the oldest group of Czech women showed a higher level of participation in gainful employment. Undoubtedly, continuing industrialization and an expanding service sector, coupled with better wages and a shortage of working-age men, created enough openings for a steadily rising female employment in the region. Participation rates of Slovak women on the other hand, present an entirely different picture having been well above those of Czech women in 1950, but far below in 1961. As noted above, this drop mainly resulted from increasing collectivization and a smaller share of agricultural employment in the total labor force, coupled with the lack of attractive alternative opportunities for employment in other branches. In contrast to the Czech Lands, where the labor force participation rate of women in all age groups increased from 33 to 41 percent between 1950 and 1961, the participation rate of all women in Slovakia declined during the same time from slightly over 42 percent to 30 percent.

3. Branch of the Economy

Relatively little information is available on the total and age-sex characteristics of the economically active population of Czechoslovakia, and even less on the branch of the economy in which these persons were employed. Data on the numbers of persons economically active by major branch grouping are available as of each of the four censuses between 1921-61, but little else. These census data are shown in table 4, with estimated figures for 1970. In addition, however, a series of figures on the economically active population, estimated as of July 1 for the years 1950 and 1955-70, are given in table VI, along with estimates of the total and working-age population, by sex. These estimates of the economically active for noncensus years are based on trends in the reported annual average numbers of persons employed in the economy and in the population of working ages, and the numbers of economically active persons in the agricultural and nonagricultural branches given in the table are a direct reflection of the employment series.

During the 1920's, the proportion of the Czechoslovak population active in agriculture declined slightly, but in absolute figures the agricultural labor force rose by almost 220,000 (table 4). Between 1930 and 1950, the number engaged in agriculture remained proportionally stable, although its total number, as well as the absolute number of the entire economically active population, declined due to the expulsion of the German population. Since the end of World War II, agricultural labor has shown a consistent significant decline, dropping by 75,000, or 3.4 percent between 1950 and 1955; 432,000, or 20.4 percent between 1955 and 1960; 210,000, or 12.5 percent between 1960 and 1965; and 100,000, or 6.8 percent between 1965 and 1970. Of the individual years, the largest drops, of 140,000 and 156,000, occurred in 1959 and 1960, respectively. Whereas two out of five economically active persons in 1921, 1930, and 1950 were in agriculture, this proportion declined to less than one out of four in 1961 and to less than one out of five in 1970. With less than 20 percent of its economically active population engaged in agriculture, Czechoslovakia has become one of the least agricultural countries in the world.

As agriculture has declined in importance, the number of persons economically active in the nonagricultural branches has increased. In 1921,

nearly 3.4 million persons, or about 60 percent of all the economically active, were employed in the nonagricultural branches. By 1970, the number has risen to 5.9 million, or more than 80 percent of the total economically active population. Between 1921 and 1950, the nonagricultural labor

Table 4. ECONOMICALLY ACTIVE POPULATION, BY BRANCH OF THE ECONOMY: 1921 TO 1970

(Absolute numbers in thousands. All data are for the present territory, with minor exceptions as described in headnote to table II. Data for the years 1921-61 are from censuses as follows: 1921 (February 15); 1930 (December 1); 1950 and 1961 (March 1). Data for 1970 are estimated as of July 1. Figures may not add to totals due to rounding)

Year	Total	Agricultural branches	Nonagricultural branches					
			Total	Industry	Construction	Transportation and communications	Trade and public dining	Other[1]
1921	5,604	2,253	3,351	1,877	263	235	347	628
1930	6,519	2,471	4,048	2,086	398	280	541	743
1950	5,812	2,206	3,606	1,804	297	336	472	697
1961	6,483	1,616	4,867	2,427	542	388	467	1,043
1970	7,223	1,371	5,852	2,712	(NA)	(NA)	(NA)	(NA)
PERCENT DISTRIBUTION								
1921	100.0	40.2	59.8	33.5	4.7	4.2	6.2	11.2
1930	100.0	37.9	62.1	32.0	6.1	4.2	8.3	11.4
1950	100.0	38.0	62.0	31.0	5.1	5.8	8.1	12.0
1961	100.0	24.9	75.1	37.4	8.4	6.0	7.2	16.1
1970	100.0	19.0	81.0	37.5	(X)	(X)	(X)	(X)

NA Not available. X Not applicable.

[1]A rough breakdown of this category for 1961 can be approximated from data on annual average employment reported in Stat. roč. 1966, p. 112. Employment figures for each of the branches were rounded upward to the nearest 5,000 to yield the estimates given here. The total for "other" was derived as a residual.

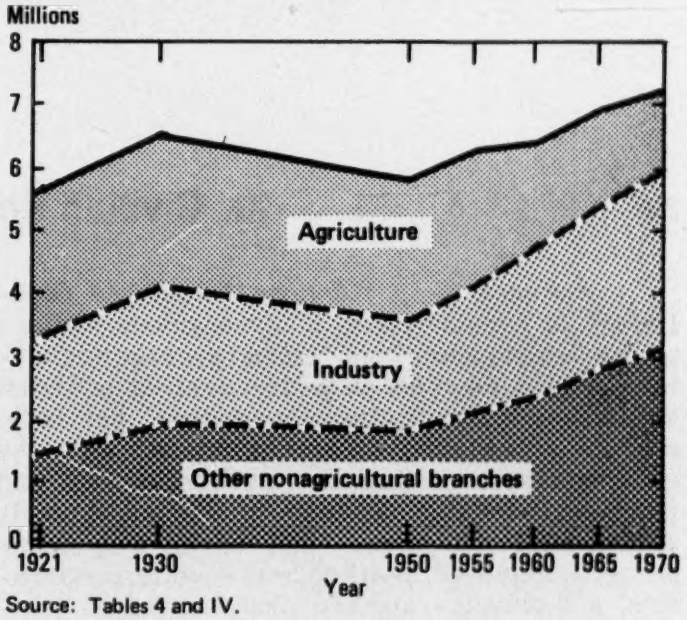
Material-technical supply	40,000	Education and culture	315,000
Science and research	120,000	Administration and justice	110,000
Communal services	95,000	Banking and insurance	30,000
Housing economy	45,000	Social organizations	25,000
Health and social care	185,000	Other	78,000

Of the 78,000 persons in the "other" category, it is estimated that approximately 12,000 are engaged in such activities as gathering scrap and waste materials; the home production of butter, milk, and leather products; individual fishing and hunting; gathering of mushrooms, wild fruits, wood, peat, etc.; and working in publishing houses and in film and sound-recording studios. It is further estimated that an additional 8,000 persons are employed by such service organizations as legal-advice bureaus and statistical machine computing centers. The bulk of the remaining 58,000 persons are probably located in such classified and unreported categories as the police, border guards, career commissioned and noncommissioned officers, etc. Enlisted personnel of the armed forces are presumably distributed among those branches of the economy which correspond to their predraft occupations or training. This arbitrary distribution of the "other" total is based on information given in Elias, The Labor, 1963, pp 48 and 51.

Source:
1921 and 1930: Frejka, "Long-Term," 1966, p. 794, and table 8.
1950: International Labour Office, Year Book 1966, pp. 112-113.
1961: International Labour Office, Year Book 1970, pp. 126-127, and Frejka, "Long-Term," 1966, p. 794.
The figure for trade and public dining in the first cited source for 1961 is only 360,000, much lower than even the average annual employment figure of 431,000. Another figure was substituted which was derived from the percentage of the total in this branch given in the second cited source. The difference was removed from the "other" category.
1970: Table II.

force grew by only 8 percent; industry declined by 4 percent and other nonagricultural branches increased by 22 percent. Between 1950 and 1970 the nonagricultural labor force grew by 62 percent in a fairly even and consistent pattern (figure 2). From 1950 to 1955, the number rose by 13.7 percent; from 1955 to 1960, by 13.8 percent; from 1960 to 1965, by 14.2 percent; and from 1965 to 1970, by 8.7 percent (table VI). During these 20 years, industry had increased by 49 percent and the other nonagricultural branches had increased by 72 percent. As a result of these differential rates of growth, industry's share of the nonagricultural labor force declined from 56.0 percent in 1921 to 46.3 percent in 1970. Between 1921 and 1961, the latest date possible to make the comparison on an individual branch basis, construction was the fastest growing branch, more than doubling in size. The residual category of "other" branches followed with a 66 percent increase, transportation and communications showed a 65 percent growth, trade and public dining rose by 35 percent, and industry was the slowest growing branch with a 29 percent rise.

Figure 2.--Economically Active Population, by Branch: 1921 to 1970



Source: Tables 4 and IV.

III. Civilian Employed Population

As used here, the term "employed population" is considered to be synonymous with the terms "employment" and "annual average employment." Employment data are derived not from population or agricultural censuses, but from monthly, quarterly, or annual reports made by enterprises, organizations, and institutions, and from periodic surveys made of certain organizations and activities. In general, they cover persons employed in all sectors--state, cooperative, and private--and are annual averages computed from information in the periodic reports or surveys. They usually are less comprehensive than the statistics gathered in the population censuses. The data given here excluded the Armed Forces, persons working for the Ministries of National Defense and Interior, persons engaged in certain unplanned activities, and apprentices.[1]

Total employment in the national economy of Czechoslovakia in 1969 was 6,916,000, an increase of 1,371,000, or nearly one-quarter, over the total in 1948 (table VII), the first postwar year for which comparable data are available and the first year in which the Communist government was in power. Growth during this period was fairly steady at a rate of slightly over 1 percent per year, but ranging from less than half a percent growth in 1951, 1952, 1958, and 1960 to a 3 percent growth in 1954. There was a 1 percent drop in total employment in 1959. Over 71 percent of the increase, or 977,000, took place in the Czech Lands, but that region's share of total employment remained at slightly over 72 percent. Employment in the Czech Lands also dropped during only 1 year, 1959, but that in Slovakia dropped during each of the 4 years, 1957-60. Over the 21-year period, however, the 25.8 percent increase in Slovakia slightly exceeded the 24.3 percent increase in the Czech Lands.

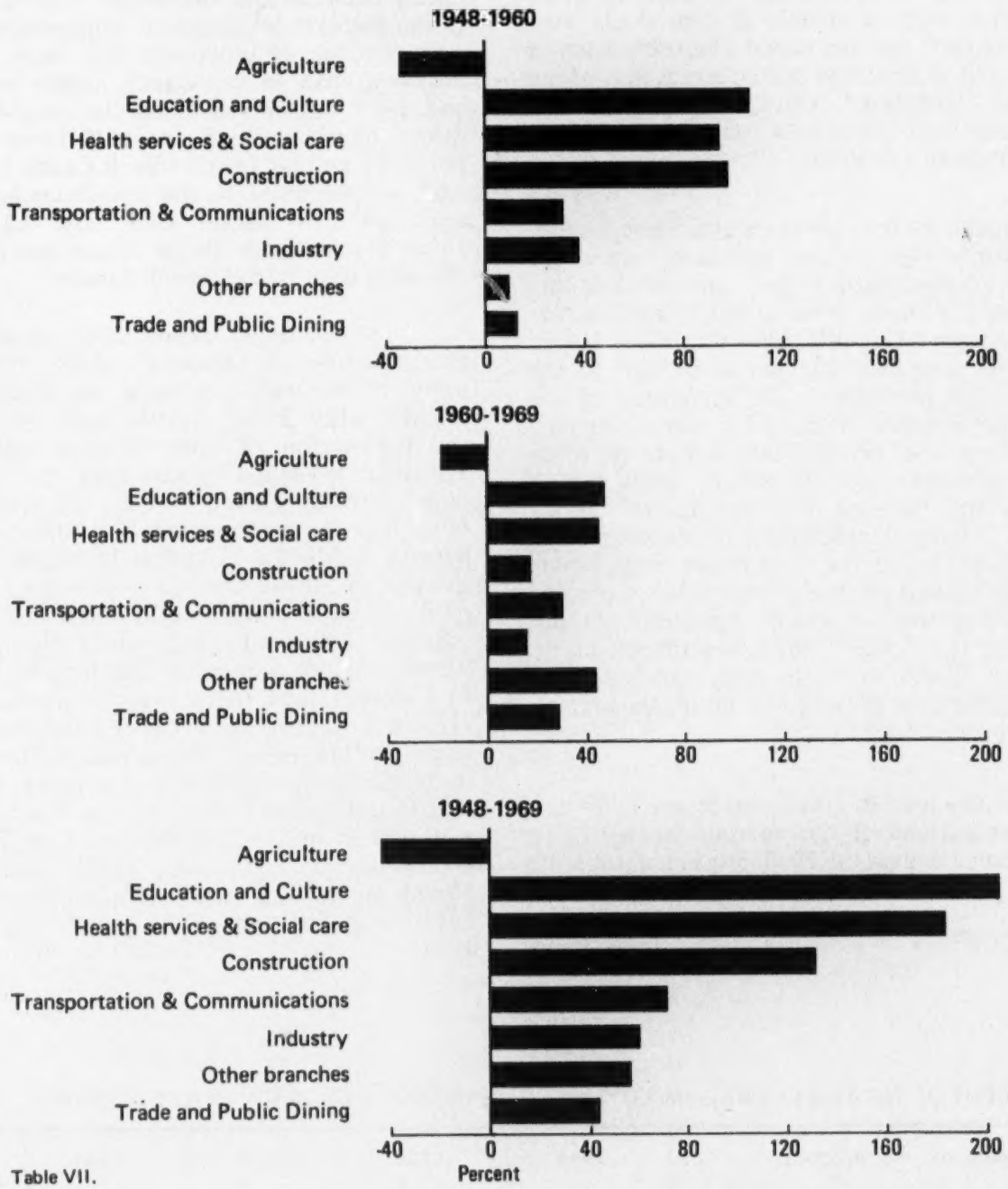
A. Branch of the economy

Until 1954 agriculture was the largest branch of the Czechoslovak economy in terms of size of employment. Since then, however, the number of persons engaged in agriculture has continued to decline, and by 1966 it was less than half the size of industrial employment. The sharpest decline took place in the late fifties when the collectivization drive was renewed. Since then the decline has been rather gradual, probably reflecting increasing mechanization and large-scale production. In 1969 agriculture was still the second largest branch of employment in the country, although it comprised only 17.2 percent of the total. The increase in agricultural employment in 1953-55 was due to a temporary relaxation of the collectivization drive, and probably also to the lack of attractive employment elsewhere.

The fastest growing branch during the 21-year period was education and culture (204 percent), followed by another "service" branch, health services and social care (184 percent). Consequently, the proportions of total employment in those two branches more than doubled between 1948 and 1969. In education and culture the proportion rose from 2.5 to 6.1 percent, and that in health services and social care rose from 1.6 to 3.7 percent. Especially rapid growth of these two branches was registered through the first half of the fifties and again during the first half of the sixties. The third fastest growing branch was construction, in which employment increased by 131 percent (figure 3). This increase was by far the fastest during the late forties--39 percent between 1948 and 1950--when the work on reconstruction of war-damaged facilities still continued while, at the same time, many new construction activities were started to satisfy the demands of the rapidly expanding postwar economy. The construction branch experienced a far-reaching change in its institutional setup by converting from predominantly small-scale, handicraft-type activities to large-scale building with a high degree of mechanization. About one-half of all new apartment buildings are now constructed from prefabricated parts. The increasing industrial character of construction activities is also reflected in the rise of the proportion of engineering-technical personnel employed in construction, from 8 percent in 1948 to 19 percent in 1968. About 85 percent of the ground work

[1] For a detailed discussion of labor force reporting in Czechoslovakia, see Elias, The Labor, 1963, passim.

Figure 3.--Changes in the Size of the Employed Population, by Branch of the Economy: 1948 to 1969



Source: Table VII.

and 60 percent of the cement work are now mechanized. [2]

The next fastest growth in the size of employment was registered by the transportation and communications branch (70 percent), which grew at a fairly steady pace throughout the period.

The basic feature in the development of Czechoslovak transportation has been the change from predominantly railroad to motor vehicle transport. For instance, the railroads' share in the number of surface passengers was 59 percent in 1948 whereas it was only 24 percent in 1968. As measured by passenger/miles, the decline was from 83 to 49 percent. In respect to freight, automotive transport's share of total tonnage doubled, increasing from 25 percent in 1948 to

[2]Vachel, "Structural," 1970, pp. 16-17.

50 percent in 1968. However, in terms of ton/miles, the railroads' share in 1968 was still overwhelming--93 percent, down slightly from 98 percent in 1948.[3] For a long time to come, railroads obviously will hold an unchallenged position as the main freight carrier. Other features in the development of Czechoslovak transportation were a sizable growth in air passenger transport, the increased electrification of railroads, and a share in the construction of the oil pipeline "Druzhba," which originates in the Soviet Union and branches out into several eastern European countries.

Measured by the rate of employment growth, industry, with a 59.9 percent increase, came next after the transportation and communications branch. As for most of the other branches, the growth in industrial employment was much faster between 1948 and 1960 (38 percent) than during the sixties (16 percent). The structure of industrial employment was, to a large extent, determined by the official investment policies during the postwar period which, until recent years, heavily favored the producers' goods industries. This development is discussed in more detail below in the section on employment by branch of industry. The slowest rate of growth in employment was in trade and public dining (43 percent); the "other" branches increased by 56 percent. These were the only two branches in which employment grew faster during the sixties than in the preceding 12 years.

These changes in employment are reflected in the contributions of the various branches to national income during the 1948-69 period (table I). The declining importance of industry and especially of agriculture is notable; construction, transportation, and other branches clearly have been increasing their contributions.

The data in table VII show distinct differences between the two major territorial regions in the pattern of change in employment by branch. Agricultural employment fell more sharply in Slovakia than in the Czech Lands between 1948 and 1969, but Slovak industrial employment grew more than three and one-half times as fast (156 percent) as that in the Czech Lands (44 percent). And, employment in the two branches of health services and social care and education and culture also grew three times more rapidly in Slovakia than in the Czech Lands.

Due to these differential rates of growth, the structure of Slovakia's share in the employment of the whole country, by branch, changed considerably between 1948 and 1969. Although the proportion of total national employment in Slovakia increased by less than one-half of 1 percent over the entire period, all nonagricultural branches except construction showed a marked growth (table 5). Especially significant was the growth in Slovakia's share of employment in the public health and social care, education and culture, and trade and public dining branches. These service activities had long been neglected in Slovakia, and their relative advancement is a sign of the economic progress and rising level of living in this area. Employment in Slovak industry increased proportionately much more rapidly than that in the Czech Lands, but the level in 1969 was still lower in Slovakia than the region's share of population (31.3 percent). On the other hand, the Slovak area was still significantly more agricultural at the end of the period than the Czech area.

[3] Ibid., p. 18.

Table 5. PERCENT OF TOTAL NATIONAL EMPLOYMENT IN SLOVAKIA, BY BRANCH OF THE ECONOMY: 1948 TO 1969

Branch of the economy	1948	1955	1960	1965	1969
Total	27.5	27.5	25.9	26.4	27.8
Agriculture	41.0	41.3	38.3	36.6	38.6
Industry	14.1	16.1	17.9	20.0	22.5
Construction	36.8	30.0	28.3	31.3	31.6
Transportation and communications	23.2	26.5	27.2	28.5	27.9
Trade and public dining	17.0	21.0	20.9	23.5	25.1
Health services and social care	14.3	23.5	24.7	27.0	29.8
Education and culture	18.1	24.9	27.3	30.5	31.4
Other branches	22.1	25.3	26.2	25.1	25.4

Source: Table VII.

As these data on employment suggest, economic development during the postwar period was faster in nearly all aspects in less-developed Slovakia than in the Czech Lands. Thus, the index of gross value of industrial output in the Czech Lands rose from 100 in 1948 to 542 in 1969, but in Slovakia it rose during the same period to 1,090 (table I). Taking 1937 as the base year, the 1969 index of industrial production for the Czech Lands was 550, but for Slovakia it was 2,137.[4] A comparison of other growth indexes in table I reveals generally similar differences. As noted above, employment in agriculture declined more sharply in Slovakia than in the Czech Lands, but investment and wages in agriculture both increased more rapidly in the Czech Lands.[5]

B. Branch of industry

Statistics concerning employment by branch of industry are available for wageworkers only. Published data on the numbers of industrial wageworkers for the years 1950-69, by branch and region, are given in table VIII, and indexes of change in the numbers for the entire country are given in table 6. Of all industrial employment, wageworkers constituted 79 percent in 1950, 78 percent in 1960, and 75 percent in 1969.

The total number of wageworkers employed in industry in 1969 was 1,963,000, an increase of 641,000, or 48 percent, over the number in 1950. The fastest growth was shown from 1955 to 1960, 18.3 percent; the slowest, from 1965 to 1969, 4.4 percent. Growth was much more rapid during the whole of the 1950's, about 2.9 percent per year; during the 1960's it fell to slightly over 1.2 percent per year. The number of workers engaged in the production of producers' goods increased twice as fast between 1950 and 1969 (62 percent) as the number engaged in the production of consumers' goods (31 percent), and the pattern of growth for each group was the same as that for the total--i.e., growth during the fifties was much faster than during the sixties.

Table 6. CHANGE IN NUMBER OF WAGEWORKERS IN INDUSTRY, BY BRANCH: 1950 TO 1969

(Indexes, 1950 = 100)

Branch of industry	1955	1960	1965	1969
Total	112	133	142	148
Group A (producers' goods)	121	144	157	162
Group B (consumers' goods)	102	119	125	131
Fuel	112	128	141	113
Electric and thermal power production	121	132	147	158
Ferrous metallurgy	129	156	175	181
Nonferrous metallurgy	95	119	129	124
Chemical and rubber-asbestos	120	156	182	204
Machine-building and metalworking	140	174	193	214
Construction materials	116	138	127	123
Woodworking	110	120	125	131
Cellulose and paper	117	135	135	144
Glass, porcelain, and ceramic	89	114	130	143
Textile	94	106	105	103
Sewn goods	95	104	109	119
Leather, footwear, and fur	84	114	127	140
Printing	88	96	100	115
Food	94	99	97	102
Other	122	167	200	189

Source: Table VIII.

By far the largest branch of Czechoslovak industry, in size of employment, is machine-building and metalworking. In 1950, this branch's share of industrial wageworkers amounted to 25

[4] Stat. roč. 1970, pp. 44-45 and 60-61.

[5] However, it appears that the differences in per capita income between the two regions have been growing instead of declining. The faster growth in labor productivity per agricultural worker in Slovakia, especially when coupled with the index of investments in agriculture which is less than half as high as that in the Czech Lands, may be due to the lower base year productivity and relative undercount of its agricultural employment, as explained in appendix A. The Slovak Statistical Office in Bratislava very strongly challenged the indexes of growth of the economy of Slovakia, as published by the Federal Statistical Office in Prague before 1968. Two articles coauthored by the Chairman and Vice Chairman of the Slovak Statistical Office show that while it is true that income per capita has been growing faster in Slovakia than in the Czech Lands since 1948, the differences in absolute values of per capita income between the two areas have been increasing instead of declining. The same is true of wages, enterprise profits, etc. Some Czech members of the Economic Commission of the Central Committee of the Communist Party of Czechoslovakia, notably Oldřich Černík, Drahomír Kolder, and Ota Šik, sided, at least in some degree, with the critical attitude of the Slovak Statistical Office even before the events of December 1967-January 1968. See Hrušovský and Marček, "How Were," No. 13, 1968, p. 4, and Hrušovský and Marček, "How Were," No. 14, 1968, p. 4. See also E. Pračko et al., "Slovakia," March 27, 1968, p. 3, March 28, 1968, p. 3, and March 29, 1968, p. 3; and Čapko, "Slovakia," 1968, p. 3.

percent; by 1960 this proportion had risen to 32 percent, and by 1969 it was 35 percent. Employment in the branch more than doubled between 1950 and 1969, and it was also the fastest growing branch of Czechoslovak industry. This rapid growth was concentrated primarily in the production of heavy machinery, while the production of electrical and advanced engineering equipment was generally neglected. Consequently, although the Czechoslovak machine-building and metalworking industry still exports slightly over 50 percent of its output,[6] other Eastern European Communist countries, which were the main customers of Czechoslovak electrical and engineering equipment in the 1950's, are turning more and more to Western firms.

The second fastest growing branch was the chemical and rubber-asbestos industry, which increased by 104 percent between 1950 and 1969. Development of the chemical industry in Czechoslovakia has been dependent primarily on imports of crude oil and natural gas. After a short period of reconstruction during the early postwar years, production was concentrated on basic inorganic compounds such as synthetic fuels, fertilizers, and fibers. In the second 5-year plan period (1956-60), emphasis was placed on the manufacture of organic chemicals as well as pulp and paper, for which Czechoslovakia has a sufficient raw material (coal and wood) base. In more recent years, attention has again been focused on the production of macromolecular substances (plastics, rubber, synthetic fibers), synthetic fertilizers, heating oils, and fuels. Despite its relatively fast growth, however, the chemical industry of Czechoslovakia is still far behind the chemical industries of more advanced industrialized countries, whether measured by the composition and use of its products or by output per capita.[7] Among the Communist countries of Eastern Europe, Czechoslovakia is next to last (only before Bulgaria) in the proportion of chemical industry output to total industrial output.[8] There is also an urgent need to increase the qualifications of persons employed in the chemical industry and to raise labor productivity which, if measured by output per worker, comes to less than one-twelfth of the level attained in the U.S. chemical industry.[9]

Employment of wageworkers in ferrous metallurgy increased by 81 percent between 1950 and 1969. In the 1950's, Czechoslovakia tried to meet its demand for iron ore as much as possible from domestic resources, but in recent years the stress has been on importing higher-quality ore from the Soviet Union.[10] The structure of metallurgical output in terms of variety and shapes of rolled products appears to be years behind that of the more advanced Western countries, but when full production begins in the mammoth Eastern Slovakian iron works much of this difference may be eliminated.[11]

There was a 58 percent growth in the number of wageworkers engaged in electric and thermal power production during the years 1950-69. The most noticeable change in the development of this branch has been the relative decline in coal as the source of power, from the prewar level of 96 percent to the present 83 percent. A more serious development, however, has been the increasing dependence of Czechoslovakia on outside sources of power and energy. From a prewar exporter of energy--about 8 percent of its total output--Czechoslovakia has now become a net importer to the extent of about 17 percent of its needs. This is in addition to the growing production of electricity and gas in Czechoslovakia which, in comparison to prewar levels, increased about eleven- and tenfold, respectively.[12]

In contrast to the rapid rise in the number of wageworkers employed in the heavy industry branches, employment in such traditional light industries as textiles and food increased relatively little, and actually declined as proportions of the total, as did all the other specific branches except the few just cited. Due to their low priority in the allocation of investment funds, especially in the 1950's, the Czechoslovak consumers' goods industries have been forced to operate with antiquated and worn out machinery. Consequently, the productivity of labor in these branches in Czechoslovakia is considerably lower than that attained in countries using more advanced technology and equipment. Judging by the growing attention being paid to these branches in recent years, it appears that serious efforts are in progress to correct past mistakes and restore the consumers' goods industries to their former place in the Czechoslovak economy.[13]

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[6] Ibid., p. 16.

[7] Poštová, "Chemicalization," 1969, pp. 12-20. See also Klouček and Kloučková, "Plastic," 1970, pp. 18-25, and Plecháč, "Czechoslovak," 1970, pp. 201-206.

[8] Plecháč, "On the Possibilities," 1970, p. 1.

[9] Filka, "Basic," 1970, pp. 37-40.

[10] Vachel, "Structural," 1970, pp. 15-16. For a discussion of prospects for the future growth of ferrous metallurgy in Czechoslovakia, see Lichnovský, "The Development," 1970, pp. 51-62.

[11] Zeman, "Structure," 1968, pp. 489-490.

[12] Vachel, "Structural," 1970, p. 15.

[13] See Kotiš, "The Problems," 1969, pp. 1-10.

The growth of industrial wageworker employment in Slovakia between 1950 and 1969 was much more rapid (113 percent) than that in the Czech Lands (37 percent), although the absolute increase in the Czech Lands was nearly double that in Slovakia. The machine-building and metalworking industry was the largest and fastest growing branch in both regions. Despite its stagnation in the Czech Lands, the textile industry remained the second largest branch in that region during the years 1950-69; proportionately, its share of industrial wageworkers dropped from 14 to 10 percent. In Slovakia, the second largest branch in both years was the food industry, but its proportion of the total number of industrial wageworkers declined from 14 percent in 1950 to 9 percent in 1969.

C. Socialization of the economy

"Socialization," or "nationalization," was not a new term[14] when introduced in Czechoslovakia after the Communist Party took over the government in February 1948. Certain activities performed on a large scale, especially in the fields of transportation, finance, and mining, were already under state control before World War II. After the war, nationalization was carried out in two stages, the first prior to February 1948 and the second subsequent to that date.

Immediately after the end of the war, property of various kinds, if owned by those classed as former enemies of Czechoslovakia or collaborators, was confiscated outright. Later in 1945, a series of presidential decrees transferred to state ownership all mining establishments as well as a major part of all industrial, banking, and some other activities. But the sweeping en bloc nationalization affecting all branches of the economy followed only after the installation of the new Communist-dominated government in February 1948.[15] By the end of that year, 47 percent of the employed population was in the socialist sector (table 7). As of the end of 1950 this proportion had increased to 61 percent, and by 1961 it was close to 96 percent. Since then it has generally remained between 97 and 98 percent.

Socialization of agriculture began shortly after the war when the Government expropriated the estates of former private landholders and established state farms. Collectivization was initiated in 1948, and by the end of 1953 about 31 percent of the total agricultural land of the country was collectivized and the number of collective farm members had reached 381,000 (table 8). In 1954, perhaps due to the uncertainties following the deaths of Stalin and Gottwald, the collectivization process was slowed down and the number of collective farm members declined in both the Czech Lands and Slovakia. The drive was revived in subsequent years, however, until it reached a peak in 1960, when over two-thirds of the total agricultural land of the country was collectively worked and the number of collective farm members exceeded 994,000. After 1960, collectivization again declined until 1965, and it appears to have stabilized since, with the number of collective farm members varying between 850,000 and 880,000 and with about 60 percent of the total agricultural land in the collectives.

The state sector of agriculture has grown continuously (table A-2). In 1953, 13 percent of agricultural land and 9 percent of the persons permanently active in agriculture were in this sector. By 1960, these proportions increased to 20 and 16 percent, and by 1969, to 29 and 24 percent, respectively. In terms of employment, Czechoslovak agriculture was less socialized than agriculture in Bulgaria, East Germany, and Romania in 1967, but much more socialized than that in Hungary and Poland.[16]

The reduction of private employment in the nonagricultural branches progressed pari passu with the socialization of the Czechoslovak economy. The 905,000 persons so employed at the end of 1948 were reduced by over one-half in the following 2 years. A further sharp drop to 109,000 occurred during the next 2 years, and then the total dribbled away to about 6,000 at the end of 1960. Those still left in the private sector were primarily small businessmen, craftsmen, and artisans, most of whom were elderly.[17]

The nationalization laws passed in 1948 brought under state control all industrial enterprises employing 50 or more persons. By

[14]The term "socialization" is sometimes used with reference to the cooperative or collective system of ownership; "nationalization" implies a governmental control of ownership on the state or lower level. Here "socialization" will be used to mean all nonprivate ownership.

[15]For a thorough discussion of the earlier stages in the nationalization of the Czechoslovak economy see Spulber, The Economics, 1957, pp. 47-59, 89-93, 133-136, and 226-230.

[16]These comparisons disregard, inter alia, certain differences among various types of collective farms in the six countries, as well as the differences in the coverage of various employment categories. For a discussion of these differences, see Elias, "Magnitude," 1970, pp. 169-179.

[17]Ypsilantis, The Labor, 1960, p. 13.

Table 7. EMPLOYED POPULATION, BY SECTOR: 1948 TO 1969

(In thousands. As of end of year. Percentages may not add to totals due to rounding)

Sector	1948	1950	1955	1960	1965	1969
Total	5,546	5,533	5,998	6,098	6,515	6,952
Socialist sector	2,592	[2]3,394	4,635	5,836	6,338	6,795
State sector[1]	(NA)	(NA)	4,221	4,856	5,507	5,938
Cooperative sector	(NA)	(NA)	414	980	831	857
Farming	[3]1	64	320	855	697	684
Nonagricultural activities	(NA)	(NA)	94	125	134	173
Private sector	2,954	2,139	1,363	262	177	157
Farming	[3]2,049	1,710	1,315	256	174	147
Nonagricultural activities	905	429	48	6	3	10
PERCENT DISTRIBUTION						
Total	100.0	100.0	100.0	100.0	100.0	100.0
Socialist sector	46.7	61.3	77.3	95.7	97.3	97.7
State sector	(NA)	(NA)	70.4	79.6	84.5	85.4
Cooperative sector	(NA)	(NA)	6.9	16.1	12.8	12.3
Farming	(Z)	1.2	5.3	14.0	10.7	9.8
Nonagricultural activities	(NA)	(NA)	1.6	2.0	2.1	2.5
Private sector	53.3	38.7	22.7	4.3	2.7	2.3
Farming	36.9	30.9	21.9	4.2	2.7	2.1
Nonagricultural activities	16.3	7.8	0.8	0.1	(Z)	0.1

NA Not available. Z Less than 0.05 percent.
[1]Includes hired personnel working in the cooperative and private sectors.
[2]Computed from annual average data.
[3]As of the end of 1949.

Source:
1948-50: Stat. roč. 1957, pp. 69, 139, and 180.
1955-65: Stat. roč. 1967, p. 111.
1969: Stat. roč. 1970, p. 124.

January 1, 1949, the extent of state ownership in the producers' goods industries varied between 92 and 100 percent, whereas in the consumers' goods industries it ranged from 70 to 90 percent.[18] Compared with the situation in other member countries of the Warsaw Pact, private industry (including industrial handicrafts) in Czechoslovakia was, in 1950, proportionately about as large as that in Romania and Hungary. Relatively, it was less than half the size of employment in private industry and industrial handicrafts in East Germany, but more than twice as large as that in Poland and about seven times as large as that in Bulgaria. However, the subsequent fast rate of socialization of industry in Czechoslovakia has made it the only communist country in the area with virtually no private industry at the present time.[19]

[18]Spulber, The Economics, 1957, p. 50.

[19]Elias, "Magnitude," 1970, p. 192.

Table 8. COLLECTIVIZATION OF AGRICULTURE, BY REGION: 1950 TO 1969

(As of end of year. Collective farm members are in thousands. Absolute figures may not add to totals due to rounding)

Year	Percent of agricultural land collectivized[1]			Number of collective farm members		
	Czecho-slovakia	Czech Lands	Slovakia	Czecho-slovakia	Czech Lands	Slovakia
1950	9.1	9.7	8.1	(NA)	(NA)	(NA)
1951	14.6	15.0	13.9	180	113	67
1952	29.7	26.0	35.9	260	143	117
1953	30.8	30.5	31.2	381	241	140
1954	26.5	26.0	27.4	304	194	109
1955	26.7	26.3	27.2	329	218	112
1956	30.8	32.0	28.9	395	273	123
1957	47.9	51.0	42.7	656	458	199
1958	59.1	62.3	53.9	852	582	270
1959	65.7	67.4	62.9	970	646	324
1960	67.5	68.5	65.8	994	665	329
1961	66.2	67.0	65.0	979	657	323
1962	65.0	65.6	64.1	948	635	313
1963	63.6	64.1	62.8	924	624	300
1964	61.3	61.5	60.8	909	615	294
1965	60.2	60.3	60.1	878	594	284
1966	60.3	60.3	60.3	866	585	282
1967	60.3	60.2	60.4	851	573	278
1968	60.3	60.2	60.4	858	577	282
1969	60.3	60.2	60.5	864	575	288

Note: Originally, there were four types of collective farms (JZD's) in Czechoslovakia which reflected the different degrees of common ownership of land, equipment, and animals, and different ways of distributing income. In agricultural statistics, types I and II were included within the private sector, whereas types III and IV constituted the collective sector. Consequently, in this table, as elsewhere in this report, the collective farm sector refers to the collective farm types III and IV; collective farm types I and II practically no longer exist.

NA Not available.

[1] Including the area of private plots of collective farmers.

Source:
1950-56: Stat. roč. 1957, pp. 141-143.
1957: Stat. roč. 1958, pp. 226-228.
1958-60: Stat. roč. 1961, pp. 265-267.
1961-62: Stat. roč. 1963, pp. 261-263.
1963-66: Stat. roč. 1967, pp. 310-312.
1967-68: Stat. roč. 1969, pp. 324-326.
1969: Stat. roč. 1970, pp. 325-327.

D. Class of worker

Postwar census data on the structure of the economically active population have not been published, or, if published, they are not available. Statistical yearbooks do contain detailed class-of-worker statistics, however, for the employed population in industry, plus data for some years on construction and various other branches or subbranches of the economy. These class-of-worker data for industry, covering the years 1950-69, are presented in table IX, and indexes of change since 1955 are given in table 9.

Table 9. INDEXES OF CHANGE IN INDUSTRIAL EMPLOYMENT, BY CLASS OF WORKER AND REGION: 1955 TO 1969

(1955 = 100)

Class of worker and region	1960	1965	1969
CZECHOSLOVAKIA			
Total	118	130	137
Industrial-production personnel	117	127	135
Wageworkers	118	127	132
Engineering-technical personnel	120	150	174
Salaried employees	99	100	101
Other	107	122	132
Nonindustrial personnel	135	175	192
CZECH LANDS			
Total	116	124	128
Industrial-production personnel	115	122	125
Wageworkers	116	121	122
Engineering-technical personnel	118	143	160
Salaried employees	97	97	97
Other	104	118	120
Nonindustrial personnel	142	181	196
SLOVAKIA			
Total	126	156	185
Industrial-production personnel	127	156	186
Wageworkers	129	156	183
Engineering-technical personnel	128	188	247
Salaried employees	104	118	127
Other	120	140	180
Nonindustrial personnel	110	152	176

Source: Table IX.

In the country as a whole, industrial-production personnel decreased slightly as a proportion of total industrial employment--from 94.8 percent of the total in 1950 to 93.3 percent in 1969. Thus, the nonindustrial personnel working in industrial enterprises increased only slightly as a proportion of total employment, even though they nearly doubled in number between 1955 and 1969 as compared with an increase of one-third in the number of industrial personnel. This relatively large increase in personnel engaged in nonindustrial activities suggests a shortage of educational, health, and other facilities and services available to the industrial labor force outside of the enterprise, especially in the Czech Lands. Thus, industrial establishments were themselves forced to create the necessary facilities or supply required services for their own personnel and sometimes for other members of the population.

Wageworkers and "other" personnel (guards, firemen, char force, etc.) increased roughly at the same rate as total industrial-production personnel, but the numbers of engineering-technical personnel rose at more than twice the rate and the numbers of salaried employees effectively remained unchanged. The rise in both numbers and proportions of engineering-technical personnel is clear evidence of an effort to raise the technical qualifications of the industrial work force.

Changes in the composition of industrial employment in the two regions followed different courses. Nonindustrial personnel did not increase as fast as did industrial-production personnel in Slovakia, whereas the opposite was true for the Czech Lands. On the other hand, the number of salaried employees increased by 27 percent in Slovakia but actually declined in the

Czech Lands. Both overall and in individual categories except nonindustrial personnel, growth was relatively much greater in Slovakia than in the Czech Lands. On the whole, the structural changes during the years 1955-69 resulted in a more similar class-of-worker composition of industry in the two major regions of the country.

E. Employment of women

In prewar Czechoslovakia, women comprised about 30 percent of total employment. They were concentrated in domestic and public services, trade, agriculture, and industry, and most were unskilled laborers or seasonal workers.[20] This proportion rose to nearly 38 percent in 1948, and by 1955 women accounted for about 43 percent of total employment and more than half of all employment in six branches of the economy (table 10). The number of women employed continued to grow more rapidly than the number of men, and as of the end of 1969 women comprised over 46 percent of total Czechoslovak employment and represented a major share of the persons employed in communications, trade and public dining, communal services, housing economy, health services and social care, education and culture, banking and insurance, and "other" branches. The highest proportion, 78.5 percent, was found in the health services and social care branch. This was followed by trade and public dining, 73.8 percent, banking and insurance, 66.2 percent, and education and culture, 63.3 percent. Except for one branch, women constituted a larger proportion of total employment in each nonagricultural branch in 1969 than they did in 1955. The drop in the proportion of women employed in the housing economy branch is unexplainable.

The branch with the largest absolute number of women employed since 1960 has been industry, with over 1.1 million persons, or 36 percent of all employed women in 1969 (table X). No detailed distribution of employed women by branch of industry is available, but it is probable that--as in many other countries--they were most numerous in the textile branch. Agriculture ranked second, with 580,000 active females, or 18 percent of all women employed in 1969. (In 1948, 1,167,000 women were engaged in agricultural activities, about 56 percent of all women employed.) These two branches, plus trade and public dining, education and culture, and health services and social care employed 2,601,000 women in 1969, or 81 percent of total female employment. The fastest growing branch between 1956 and 1969 was science and research, in which female employment more than tripled, followed by five branches--housing economy, communal services, communications, construction, and education and culture--in which the number of employed women more than doubled (table 10).

The proportions of women holding "leading" positions in most elements of the Czechoslovak economy have been very small, although recent data are not available. As of March 1, 1961, only 1.6 percent of all directors of production, construction, and transportation organizations were women. The proportions also were very small among top technical specialists (2.4 percent) and among the upper-level personnel of the central and regional organs of state administration (3.6 percent). On the other hand, women accounted for 18.2 percent of all senior economists and for 30.1 percent of all senior personnel in communal services and housing economy and 27.8 percent in communications.[21]

F. Specialized manpower

The demand of the Czechoslovak economy for graduates of higher schools, especially in the technical fields, reportedly has been growing faster than the number of such graduates, thus forcing enterprises to offer a large number of positions to persons lacking appropriate qualifications.[22] And the situation in respect to the supply of persons trained at the specialized-secondary (vocational-technical) level apparently is not much better.[23] Thus, despite significant achievements in the postwar period in raising enrollment and graduations at all levels of education and the high proportion of specialists already employed in the economy, supply still does not meet demand.

The number of higher and specialized-secondary school graduates (defined here as specialists) employed in the Czechoslovak eco-

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[20]Srnská, "Employment," 1965, p. 399.

[21]"Data," 1964, p. 379.

[22]Benčat, "Qualified," 1963, p. 42. There are also cases, notably in construction, where enterprises are unwilling to hire recent college graduates because of their lack of practical experience. See Záhořík, "Qualifications," 1963, p. 75. For a more detailed discussion of educational attainment of the Czechoslovak labor force, see Kodaj, "Qualifications," 1968, pp. 242-254.

[23]See e.g., Kotrč, "To Increase," 1963, pp. 79-84; Nebeský, "The Development," 1964, pp. 71-75; Nemec and Snoha, "To Raise," 1962, pp. 38-44; Rudaš, "Extramural," 1964, pp.293-294; and Snížek, "Problems," 1963, pp. 484-491.

Table 10. EMPLOYMENT OF WOMEN, BY BRANCH OF THE ECONOMY: 1955 TO 1969

(As of end of year)

Branch of the economy	Percent women in the employed population				Change in number of women employed (1955 = 100)		
	1955	1960	1965	1969	1960	1965	1969
Total	42.7	42.8	44.8	46.2	102	114	125
Industry	34.9	37.7	41.1	43.3	128	152	167
Construction	10.0	12.3	14.0	15.0	152	182	220
Agriculture	55.0	52.6	51.2	49.8	69	59	55
Forestry	30.0	35.3	30.8	28.6	124	100	89
Transportation	[1]15.4	[1]17.3	[1]19.6	[1]21.2	116	156	186
Communications	[1]44.7	[1]50.7	[1]56.4	[1]61.0	146	192	238
Trade and public dining	61.9	68.3	71.6	73.8	114	128	158
Material and technical supply	42.7	46.2	46.2	47.9	107	164	186
Procurement of agricultural products	25.3	31.1	38.3	38.3	111	156	178
Science and research	23.6	29.3	31.4	32.5	182	282	347
Communal services	44.4	46.5	54.2	52.2	121	215	250
Housing economy	65.2	65.3	54.4	51.6	179	243	286
Health services and social care	72.1	73.5	77.5	78.5	119	157	186
Education and culture	55.9	59.7	61.0	63.3	131	176	203
Administration and justice	37.4	42.6	44.6	48.6	90	102	121
Banking and insurance	45.1	54.2	61.6	66.2	115	162	177
Social organizations	32.1	34.6	35.2	40.6	88	100	150
Other	[1]58.9	[1]61.5	[1]63.2	[1]60.7	140	160	173

[1]Based on annual averages.

Source:
Percent women: Stat. roč. 1970, p. 123, and Stat. roč. 1967, p. 110.
Index numbers: Table X.

nomy increased from 733,000 in 1959 to 1,111,000 in 1966 (table XI). This was a rise of about 52 percent, as compared with an increase of 9 percent in total employment during the same time period (table VII). The industry and education and culture branches together gained 217,000 specialists, or more than half of the total rise in the number of employed specialists. The number of specialists increased at a faster rate than total employment in all branches but two--trade and public dining and banking and insurance.

The branches with the highest proportions of specialists were health services and social care and education and culture. In 1959, the proportion of specialists among those employed in health services and social care was over 48 percent, and by 1966, it had risen to 51 percent. In education and culture the proportion increased from slightly below to slightly above 52 percent. Of the other major branches, industry showed an increase in the proportion of employed specialists from 11 to 15 percent, construction from 12 to 16 percent, and transportation and communications from 7 to 11 percent. For all branches, the proportion rose from 12 to 17 percent.

Overall, the numbers of employed specialists with higher degrees increased between 1959 and 1966 at about the same rate (51 percent) as those with specialized secondary diplomas (52 percent). Specialists trained in technical subjects rose substantially during these years as a proportion of all specialists, indicating a stronger emphasis on education in technical fields. Thus, technical specialists were 37 percent of all employed specialists in 1959, and 45 percent in 1966. In industry, technically trained specialists rose from 69 percent of all specialists with higher degrees in 1959 to 76 percent in 1966; those with technical training in specalized secondary schools increased from 59 percent of the total in 1959 to 67 percent in 1966.

Table 11. SPECIALISTS WITH HIGHER AND SPECIALIZED SECONDARY EDUCATION EMPLOYED IN THE COUNTRIES OF EASTERN EUROPE AND THE U.S.S.R.: CIRCA 1966

(Number of specialists in thousands)

Country	Date	Number of specialists	Number in estimated labor force per specialist	Number in total population per specialist
Czechoslovakia.....	1966 (Oct. 31)....	1,111	6	13
Bulgaria.....	1966 (Nov. 1).....	397	11	21
East Germany.....	1966 (Sept.-Dec.).	[1]557	15	31
Hungary.....	1960 (Jan. 1).....	[2]503	10	20
Poland.....	1964 (Oct. 31)....	[1]909	17	34
Romania.....	1964 (June 1).....	[2]668	15	28
U.S.S.R.....	1966 (Nov. 15)....	12,924	9	18

[1]Employed in the socialized sector only.
[2]Includes general secondary school graduates.

Source:
Number of specialists:
Czechoslovakia: Table XI.
U.S.S.R.: Nar. khoz. 1967, p. 665.
Other countries: Elias, "Magnitude," 1970, p. 238.

Labor force and population:
Czechoslovakia: Tables II and VI.
Other countries: Estimates of the Foreign Demographic Analysis Division, U.S. Bureau of Economic Analysis.

In comparison with other countries of Eastern Europe, Czechoslovakia has a significantly higher number of specialists employed in its economy. Data in table 11, which provide only a rough comparison [24] of the numbers of specialists in these countries, show that Czechoslovakia ranks second in the number of employed specialists only to the U.S.S.R. and far above the next country, Poland. In terms of employed specialists relative to labor force, Czechoslovakia had by far the highest ratio of all the countries shown: one specialist for every 6 persons in the labor force in 1966. The U.S.S.R. had one specialist for every 9 persons in that same year, and ratios for the other countries ranged on up to one specialist for every 17 persons in the labor force in Poland. Since the labor forces in these countries all ranged between 49 and 54 percent of the total populations, the ratios about double when employed specialists are related to the total populations.

Information on the level of education within specific occupations is very scarce, and the data in table 12 from the population census of March 1, 1961, represent the most recent available picture of this indicator for selected employment categories. These figures provide strong evidence that at the beginning of the 1960's the educational level of persons in a number of key positions was quite low. Thus, more than 50 percent of all senior governmental administrators, directors of production, construction, transportation, agricultural, and forestry organizations, and heads of trade organizations in 1961 had only an elementary or lower vocational education. And only slightly more than half of the senior technical specialists (58 percent) and economists (53 percent) had a secondary, higher vocational, or higher education. Chief agricultural specialists, of whom just two-thirds had a secondary, higher vocational, or higher education, had by far the highest level of educational attainment of the employment categories shown. As could be expected, chairmen

[24]Aside from the differences resulting from the heterogeneous structures of the school systems, statistics on Hungary and Romania are overstated because they include employed graduates of general secondary schools, whereas those for Poland and especially East Germany are understated since they cover only the socialized sector. The data for Bulgaria and the U.S.S.R. seem to be the most comparable with those for Czechoslovakia.

Table 12. PERCENT DISTRIBUTION OF LEVEL OF EDUCATION ATTAINED BY PERSONS IN SELECTED EMPLOYMENT CATEGORIES: MARCH 1, 1961

Employment category	Total	Elementary	Lower vocational	Higher vocational	Complete general secondary	Higher school
Leading personnel of state administration	100.0	61.1	10.4	11.2	8.8	8.4
Directors of production, construction, and transportation organizations	100.0	38.8	21.1	20.7	6.0	13.3
Leading technical specialists	100.0	23.5	18.8	26.1	4.9	26.7
Leading (senior) economists	100.0	22.3	25.4	29.2	13.9	10.0
Leading personnel of trade organizations	100.0	50.1	19.0	15.7	7.2	7.9
Directors of state agricultural and forestry organizations	100.0	28.3	23.0	26.2	3.3	19.1
Chief agricultural specialists	100.0	18.7	14.3	26.0	2.3	38.3
Chairmen of collective farms	100.0	77.8	15.1	4.2	0.9	1.8

Source: Ústřední, Vývoj, 1965, p. 105. Percentages are given as cited in the source, and in some cases do not equal 100.0 percent.

of collective farms had the lowest level of education, with only 7 percent in the secondary, higher vocational, and higher levels.

Data on educational attainment in certain top-level occupations in agriculture are available from the agricultural census of February 1, 1963 (table XII). In general, these data are consistent with those from the population census of 1961 (table 12). The proportions of both directors of state farms and collective farm chairmen who had achieved a higher education increased slightly during the 2 years, as is probably the case with those who had secondary or higher vocational educations. It is of note that in five of the nine positions shown in table XII, Slovakia had larger proportions of persons with a higher education--notably so for directors of state farms and technicians employed on these farms. This probably was the result of increasingly larger numbers of graduates in agricultural subjects in Slovakia, official encouragement of graduates to accept positions on state farms in Slovakia, and advantageous job benefits offered by the state (and the collective) farms.

No data are available on the educational background of persons engaged in private agriculture or employed in lesser positions in the state and cooperative sectors. However, it may be assumed that their educational level is much lower than even that of the least educated category given in table XII.

IV. Prospects for Future Growth

A. Future population

The population of Czechoslovakia is expected to grow from 14.5 million in 1970 to between 14.9 and 16.4 million in 1990, depending primarily on the level of fertility during that period. If fertility remains at the 1970 level, if migration remains negligible, and if mortality declines at a modest rate, a population of 15,459,000 is projected for 1990 (table XIII). This would represent an increase of 6.9 percent during the 20-year period, or an annual rate of growth of about 0.3 percent. Such a rate would place Czechoslovakia below the average for the Communist countries of Eastern Europe. If assumptions similar to those noted above with respect to fertility, mortality, and migration are used for projections of the populations of other countries of that area, the rate of growth of the population of Czechoslovakia during the 20-year period would be slower than that of Albania, Bulgaria, Poland, Romania, and Yugoslavia but faster than that of East Germany and Hungary.[1]

Due to the relatively low level of fertility assumed in these projections, the population under 15 years of age will increase by only about 16,000, or 0.5 percent, between 1970 and 1990 (table 13).[2] Consequently, as a proportion of the total population, this age group will drop from 23.1 percent in 1970 to 21.7 percent in 1990 (table XIII). The population within working ages, males 15 to 59 and females 15 to 54 years old, is expected to increase by 746,000, or 9.0 percent, a faster rate than that for the total population. This able-bodied population will grow relatively fast between 1970 and 1980, when its share of the total population will rise from 57.0 to 58.2 percent; between 1980 and 1990 it will grow less rapidly, and its share of the total will decline slightly to 58.1 percent. Within the working-age population, both males and females 30 to 44 years of age will increase faster than the younger and older cohorts. In fact, the numbers will decline in the age group 15 to 24 years for both sexes, in the age group 55 to 59 years for men, and in the age group 45 to 49 years for women over the 20-year period.

[1]For detailed data on population projections for the countries of Eastern Europe see Myers, "Demographic," 1970, pp. 111-148, and Baldwin, Projections, 1969, passim.

[2]For a brief discussion of the recent situation concerning fertility in Czechoslovakia, see Srb, "Our," 1968, pp. 759-762.

Table 13. PROJECTED CHANGE IN THE SIZE OF THE POPULATION, BY AGE AND SEX: 1970 TO 1990

(Absolute figures in thousands. They may not add to totals due to rounding)

Age	Both sexes		Male		Female	
	Number	Percent	Number	Percent	Number	Percent
All ages.....	992	6.9	463	6.6	528	7.1
Under 15 years.....	16	0.5	-12	-0.7	28	1.7
15 to 19 years.....	-169	-13.0	-96	-14.6	-72	-11.4
20 to 24 years.....	-211	-16.8	-112	-17.6	-99	-16.0
25 to 29 years.....	48	4.6	25	4.8	23	4.5
30 to 34 years.....	286	33.8	146	34.4	140	33.2
35 to 39 years.....	355	39.6	182	40.7	173	38.5
40 to 44 years.....	257	27.1	137	29.4	121	24.9
45 to 49 years.....	-14	-1.4	5	1.0	-19	-3.7
50 to 54 years.....	215	37.6	109	39.8	106	35.6
55 to 59 years.....	-50	-5.9	-23	-5.7	-27	-6.2
60 to 64 years.....	-21	-2.6	-17	-4.3	-5	-1.1
65 years and over.....	280	17.2	120	18.2	160	16.6

Source: Table XIII.

The population above the working ages is expected to increase by 230,000, or 8.0 percent, but as a proportion of the total it will decline from 20.0 percent in 1970 to 19.5 percent in 1980 and rise again to 20.2 percent in 1990. Since the population outside the working ages is expected to grow by only 4.0 percent, the dependency ratio is expected to decline from 755 per 1,000 persons in the able-bodied ages in 1970 to 720 in 1990.

The sex ratio of the population is expected to show no change during the 20-year period, remaining at 95 males per 100 females. In the population under 15 years of age, the ratio will decline from 104 in 1970 to 102 in 1990, and among those aged 60 and over, the already low ratio of 74 will drop further to 73. The population aged 15 to 59, essentially the working-age population, is expected to maintain its 1970 sex ratio of 99 males per 100 females throughout the projected period.

B. Projections of the labor force

The economically active population of Czechoslovakia is projected to increase from about 7.2 million in midyear 1970 to between 7.7 and 8.0 million by midyear 1990, depending upon the assumptions made regarding participation of the population in the labor force (table 14). The projected increase amounts to between 500,000 and 800,000 persons during the 20-year period, an average annual increase of between 25,000 and 40,000. This anticipated growth is smaller than that estimated for the preceding 20-year period, which amounted to about 67,000 persons annually, due to a slowdown during the projection period of rates of increase for both the working-age population and age-sex specific participation rates. If the slow growth of the economically active population actually occurs, it will be a serious problem for the Czechoslovak economy during the period of the fifth Five-Year Plan (1971-75), and later. An especially tight market may be expected for industrial labor in the Czech Lands.[3]

The size of the labor force is determined by the age and sex structure of the population and the extent to which different age-sex groups participate in economic activities. For a decade or two, the size and age-sex composition of the working-age population may be projected with a fair degree of accuracy. In the projections presented here, almost all of the population which will be within the working ages in 1990 has already been born. However, the extent to which the future population will engage in economic activities is far more difficult to predict. That will depend on a combination of economic, demographic, social, and other factors, for example: The rate of growth of secondary and tertiary industries; the levels of wages, pensions, and investment; aspirations concerning level of living; length of time of compulsory school attendance; family size; etc.[4] Some of these factors may act as deterrents to participation while others may act as inducements for entering employment. Consequently, the size of the future labor force can be forecast with considerably less accuracy and certainty than the size of the future working-age population.

The labor force participation rates in Czechoslovakia in 1961 were higher than the European average, particularly for women, but they were somewhat below those of the other countries of Eastern Europe.[5] The male rates were higher than those in Poland, but lower than those in Bulgaria, Hungary, Romania, and Yugoslavia. The female rates were higher in Czechoslovakia than those in Hungary, but lower than those in the other countries. Significant differences among the various countries in the definition and coverage of the economically active population, however, render meaningful comparisons of age-sex specific rates an almost impossible task. This is especially so for women.

Projections of the economically active population given in table 14 are based on various assumptions concerning the expected participation in economic activities by males and females at different ages. In variant I, which presents the lower range of projections, it was assumed that the participation rates for males and females aged 15 to 24 will decline slightly over the projected period, due to an expected proportional increase in the number of full-time students in those ages, as well as an allowance for extensions in the period of study. This assumption is based on the plans and expected requirements for a more skilled and professional labor force in the future. Participation rates for males aged 60 and over and females aged 55 and over were likewise permitted to decline, on the assumption that as more and more persons become eligible for full pension under pension plans instituted after World War II, larger numbers will actually retire

[3] See "Preparation," 1970, p. 1, and Vinař, "Development," 1970, pp. 93-94.

[4] For a more detailed enumeration of various factors, see Jüngling and Nachtigal, "Balance," 1967, pp. 893-902, and Srb and Wynnyczuk, "From Planning," 1965, p. 3.

[5] See United Nations, Demographic Aspects, 1962, pp. 11 and 23; United Nations, The European, 1969, p. 202; and International Labour Office, Year Book 1969, pp. 31-38.

Table 14. ESTIMATED AND PROJECTED ECONOMICALLY ACTIVE POPULATION, BY AGE AND SEX: 1970 TO 1990

(In thousands. As of July 1. Figures may not add to totals due to rounding)

Age and sex	1970	Variant I				Variant II			
		1975	1980	1985	1990	1975	1980	1985	1990
BOTH SEXES									
All ages.....	7,223	7,416	7,561	7,656	7,720	7,489	7,705	7,888	8,033
15 to 19 years.....	635	562	524	500	530	568	535	516	553
20 to 24 years.....	1,024	1,042	926	868	830	1,048	938	884	851
25 to 29 years.....	840	1,016	1,040	931	879	1,019	1,047	940	889
30 to 34 years.....	702	845	1,024	1,049	939	848	1,030	1,058	951
35 to 39 years.....	770	718	866	1,050	1,076	720	871	1,059	1,088
40 to 44 years.....	820	764	714	861	1,045	769	722	876	1,069
45 to 49 years.....	841	789	736	689	832	794	745	701	851
50 to 54 years.....	456	764	718	671	628	769	727	684	645
55 to 59 years.....	553	345	566	522	479	352	590	556	521
60 to 64 years.....	345	312	189	298	263	330	211	354	334
65 years and over.....	239	258	258	218	219	272	289	260	281
MALE									
All ages.....	4,177	4,302	4,427	4,489	4,517	4,327	4,470	4,561	4,615
15 to 19 years.....	307	272	253	239	251	275	259	247	263
20 to 24 years.....	596	607	540	507	481	611	546	515	491
25 to 29 years.....	511	619	634	567	535	619	634	567	535
30 to 34 years.....	420	508	615	631	565	508	615	631	565
35 to 39 years.....	438	409	494	600	616	409	494	600	616
40 to 44 years.....	452	425	398	481	585	425	398	481	585
45 to 49 years.....	459	434	409	383	464	434	409	383	464
50 to 54 years.....	257	428	405	382	359	428	405	382	359
55 to 59 years.....	361	228	381	361	341	228	381	361	341
60 to 64 years.....	213	193	117	186	167	202	128	214	204
65 years and over.....	163	179	180	152	154	188	200	178	193
FEMALE									
All ages.....	3,046	3,113	3,134	3,167	3,203	3,162	3,235	3,327	3,418
15 to 19 years.....	327	290	271	261	279	293	276	269	290
20 to 24 years.....	428	434	386	361	349	437	392	369	360
25 to 29 years.....	329	397	406	364	343	400	412	373	354
30 to 34 years.....	281	338	408	418	375	340	415	427	386
35 to 39 years.....	332	309	372	450	460	311	377	459	473
40 to 44 years.....	368	339	316	380	460	343	324	395	484
45 to 49 years.....	382	356	328	306	368	360	336	318	387
50 to 54 years.....	199	336	313	289	270	341	322	302	286
55 to 59 years.....	192	116	185	161	138	124	209	195	180
60 to 64 years.....	132	119	72	112	96	128	83	140	131
65 years and over.....	75	79	78	66	65	84	89	82	88

Source: Tables XIII and XIV. See text for explanation.

upon reaching retirement age (60 years for males and 55 years for females).[6] Participation rates for males aged 25 to 59 and females aged 25 to 54 were assumed to remain at their estimated 1970 levels (table XIV).

Considering the current labor shortage, the requirement for a better trained labor force, and an expected decline in the number of able-bodied persons during some years of the projection period, Czechoslovakia would experience a critical labor shortage during the next two decades if the participation of her able-bodied population in eco-

[6]See, for example, Ambrož, "Aging," 1969 pp. 311-320.

nomic activities should drop below the 1970 level.[7] Recent federalization of the country will no doubt tend to make matters more difficult, at least with respect to the mobility of labor. Migration of the able-bodied population from Slovakia to the Czech Lands, a more or less accepted postwar phenomenon, will probably be discouraged in the future by the Slovak authorities--except, perhaps, for such high national priority branches as uranium and coal mining and housing construction in Prague.[8] This policy may also help to bridge the gap which still exists between the economic development of the eastern and western parts of the country.[9] Actually, it is expected that about 80 percent of the new labor resources in the country as a whole during the next few years will be found in Slovakia.[10] Under these conditions, it seems improbable that the participation rates of able-bodied men and women, in either the Czech Lands or Slovakia, will drop below their 1970 levels.

Variant II shows a higher range of projections of the Czechoslovak labor force. These projections are based on the assumption that the participation rates will remain at their 1970 levels or will increase. Consequently, the participation rates for all males and those for females aged 15 to 24 and 55 and over were assumed to remain at their 1970 levels throughout the projection period. Furthermore, the rates for females aged 25 to 54 were assumed to increase slightly during the period, bringing them closer to the levels of participation in these age groups in most other Eastern European countries. Again, it appears to be a hard fact that the only significant labor reserve to be found presently and in the near future in Czechoslovakia is that represented by under- or unemployed women, a large proportion of whom are located in Slovakia.[11] To bring these additional women into active participation, special attention will have to be paid to the training of thousands of presently unemployable women.

The differences between variants I and II are small, especially for males (table 15). According to the variant I projections, all gains in the labor force are expected in the age group 25 to 54 for both males and females; the other age groups show a net loss. The variant II projections show similar trends, although the gains are larger and the losses smaller. The proportion of the male labor force aged 40 years and older is expected to increase slightly from 45.6 percent in 1970 to between 45.8 and 46.5 percent in 1990. The proportion of the female labor force in these ages, 44.3 percent in 1970, will decrease to 43.6 percent in variant I and increase to 45.5 percent in variant II. Consequently, the Czechoslovak labor force will be slightly older in 1990 than it was in 1970; the median age will increase from 37.7 years in 1970 to between 38.2 and 38.6 years in 1990.

The sex ratio of the economically active population will decline according to the high (variant II) projections, from 137 males per 100 females in 1970 to 135 in 1990; according to the low (variant I) projections, it will rise to 141. The proportion of women in the labor force is therefore expected to decline in variant I from 42.2 percent in 1970 to 41.5 percent in 1990, and to increase in variant II to 42.5 percent. These changes result from both a slight decline of the sex ratio of the population within the working ages, from 110 men per 100 women in 1970 to 109 in 1990, and the assumptions regarding labor force participation of men and women.

The pattern of growth will vary considerably over the 20-year period. The largest total increase in either variant is expected to occur between 1970 and 1975, the smallest between 1985 and 1990. As shown in table 15, the number of economically active persons within many of the age-sex groups may actually decline during various periods. This decline will be particularly serious in the two younger age groups of both sexes between 1975 and 1980. Average annual rates of growth of the total, working-age, and economically active populations for 5-year intervals of the 1950-90 period are shown in table 16.

If it is difficult to predict the future size of the total labor force, it is far more difficult to project the distribution by branch of the economy or branch of industry. A variety of additional factors come into play, most of which are almost impossible to measure or project into the future. Official economic plans, however, contain certain targets or desiderata concerning the future branch

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[7]Statements to this effect were made by some of the leading Czechoslovak economic-demographers as early as 1962. See, e.g., Srb, "The Long-Term," 1962, p. 4; Maděrová, "On Labor," 1963, p. 6; and Bučková and Koubová, "The Long-Term," 1966, p. 1.

[8]Plašil, "The World," 1970, pp. 16-17.

[9]Hvorecký, "Economic," 1971, p. 3, and Kozár, "Prospects," 1966, p. 47.

[10]Blahušiak, "To the Questions," 1970, p. 49. According to a 1964 source, within Slovakia there were districts in which more than two-thirds of the women within the working ages were employed, while in other districts their employment level reached only about 40 percent. Kuba, "Employment," 1964, p. 59.

[11]Bartoš, "Labor," 1968, pp. 448-462; Hvorecký, "Slovakia," 1964, pp. 437-438; Janderová and Volf, "Problems," 1966, pp. 124-125; Kučera, "Employment," 1967, pp. 26-31; Tkáčik, "Conditions," 1970, pp. 8-9; and Žurek, "On Questions," 1963, p. 34.

Table 15. PROJECTED CHANGE IN THE SIZE OF THE ECONOMICALLY ACTIVE POPULATION, BY AGE AND SEX: 1970 TO 1990

(In thousands. As of July 1. Figures may not add to totals due to rounding)

Age and sex	Variant I					Variant II				
	1970 to 1990	1970 to 1975	1975 to 1980	1980 to 1985	1985 to 1990	1970 to 1990	1970 to 1975	1975 to 1980	1980 to 1985	1985 to 1990
BOTH SEXES										
All ages	497	192	145	95	65	809	265	216	183	145
15 to 19 years	-105	-73	-38	-24	30	-82	-67	-33	-19	37
20 to 24 years	-194	17	-115	-58	-38	-173	23	-110	-54	-33
25 to 29 years	39	177	24	-109	-53	50	180	27	-107	-50
30 to 34 years	238	143	179	25	-109	249	146	182	28	-107
35 to 39 years	306	-52	148	184	26	318	-49	151	188	30
40 to 44 years	225	-56	-50	147	184	249	-52	-47	154	193
45 to 49 years	-10	-52	-53	-48	143	10	-47	-49	-44	151
50 to 54 years	173	309	-46	-47	-42	189	314	-42	-44	-39
55 to 59 years	-74	-209	221	-44	-43	-32	-202	238	-34	-35
60 to 64 years	-82	-32	-124	109	-34	-11	-15	-119	143	-20
65 years and over	-19	19	(Z)	-40	2	42	34	17	-29	21
MALE										
All ages	340	125	125	62	29	437	149	143	90	54
15 to 19 years	-56	-36	-18	-14	12	-45	-33	-16	-12	16
20 to 24 years	-115	11	-67	-33	-26	-105	14	-65	-31	-23
25 to 29 years	25	108	15	-67	-32	25	108	15	-67	-32
30 to 34 years	144	87	108	16	-66	144	87	108	16	-66
35 to 39 years	178	-28	85	105	16	178	-28	85	105	16
40 to 44 years	133	-27	-27	83	103	133	-27	-27	83	103
45 to 49 years	5	-26	-25	-25	81	5	-26	-25	-25	81
50 to 54 years	102	172	-23	-23	-23	102	172	-23	-23	-23
55 to 59 years	-20	-133	153	-20	-20	-20	-133	153	-20	-20
60 to 64 years	-46	-20	-76	69	-19	-9	-10	-74	86	-11
65 years and over	-9	16	1	-28	2	30	25	12	-22	14
FEMALE										
All ages	158	67	20	33	37	372	116	73	92	91
15 to 19 years	-49	-37	-19	-10	18	-37	-34	-17	-7	21
20 to 24 years	-79	6	-48	-25	-12	-69	9	-45	-23	-10
25 to 29 years	15	69	9	-42	-21	25	72	12	-40	-19
30 to 34 years	93	56	71	9	-43	105	59	74	12	-41
35 to 39 years	128	-23	62	78	10	140	-21	65	82	14
40 to 44 years	92	-29	-23	64	80	116	-25	-19	71	90
45 to 49 years	-14	-26	-28	-22	62	5	-22	-24	-19	70
50 to 54 years	71	137	-23	-24	-19	87	142	-18	-21	-16
55 to 59 years	-54	-76	68	-24	-23	-12	-68	85	-14	-15
60 to 64 years	-36	-13	-48	40	-16	-1	-4	-45	57	-9
65 years and over	-10	3	-1	-12	(Z)	13	9	5	-8	6

Z Less than 500.

Source: Table 14.

or educational structure of the labor force, and those available are summarized below.

Basically, it is anticipated that the proportion of the population economically active in the primary sphere--agriculture and forestry--will continue to decline, from 19 percent of the total labor force in 1970 to about 14 percent by 1980. The proportion in the secondary sphere--industry and construction--is expected to remain at the level reached in the midsixties, or about 47 percent. These changes would raise the proportion of the labor force in the tertiary sphere--all remaining branches of the economy--from

Table 16. GROWTH RATES OF SELECTED MANPOWER MEASURES: 1950 TO 1990

(In percent per year)

Measure	1950 to 1960	1960 to 1965	1965 to 1970	1970 to 1975	1975 to 1980	1980 to 1985	1985 to 1990
Total population....	1.0	0.7	0.4	0.4	0.4	0.3	0.2
Working-age population....	0.3	0.8	0.7	0.8	0.5	0.1	0.4
Economically active population.....	0.9	1.4	1.0	(X)	(X)	(X)	(X)
Variant I.....	(X)	(X)	(X)	0.5	0.4	0.3	0.2
Variant II.....	(X)	(X)	(X)	0.7	0.6	0.5	0.4

X Not applicable.

Source: Tables 14, II, VI, and XIII.

about 34 percent in 1970 to about 39 percent by 1980.[12]

The number of employed specialists is expected to continue to grow much faster than the total labor force. According to plans, the number of higher and specialized secondary school graduates will increase from 1.1 million in 1966 to 1.3 million in 1970, 1.6 million in 1975, 1.7 million in 1980, and 1.9 million in 1985.[13] This represents an increase of 46 percent between 1970 and 1985 as compared with a 6 to 9 percent increase in the total labor force during the same time period. The educational attainment of specialists employed in the Czechoslovak economy is planned to increase as follows:

Level of education	1970	1975	1980	1985
Total.....	100.0	100.0	100.0	100.0
Higher.....	21.6	23.9	25.7	26.8
Specialized secondary.....	51.8	52.7	54.0	55.4
Vocational.....	26.6	23.4	20.3	17.8

Source: Juránek and Blažek, "Problems," 1968, p. 48.

It is expected that the relative numbers of specialists in the branches of the nonproductive sphere, such as health services and social care, education and culture, and communal and housing economy, will generally remain unchanged. In industry, where efforts are continuing to reduce administrative personnel and raise the proportion of engineering-technical personnel, the number of specialists is expected to grow fastest in mining, heavy and general machine-building, and the chemical industry.

If the present situation is any guide for the future in the area of supply of and demand for skills, Czechoslovakia may continue to experience acute shortages in certain occupations, such as carpenter, baker, painter, roofer, shoemaker, and agricultural machinery operator. These occupations do not seem to have enough glamour or high enough pay to attract a sufficient number of apprentices, or to hold them after they have finished their training. It has been reported that almost one-third of all skilled workers now employed are not working in the branch for which they were trained. This is particularly true of such branches of industry as food and machine-building and metalworking.[14] The situation is frequently a subject of public discussion and criticism, and steps may well be taken to correct it.

[12]Bučková and Koubová, "The Long-Term," 1966, p. 10; Divila, "The Long-Term," 1964, p. 676; Dupal, Havliček, Divila, and Hrabě, "On the Question," 1966, p. 99; Haliena and Stepanovič, "On the Need," 1967, p. 48; Lacina, "The Long-Term," 1967, p. 45; and Šrucová and Veselý, "The Development," 1971, p. 9.

[13]Bučková and Koubová, "The Long-Term," 1966, p. 8. See also Juránek, "Development," 1965, pp. 59-60, and Pázman and Svetoň, "The Prospects," 1959, p. 179.

[14]Volf and Snížek, "What Is," 1970, pp. 1-2.

Table I. BASIC INDICATORS OF GROWTH OF THE CZECHOSLOVAK ECONOMY, BY REGION: 1948 TO 1969

(Indexes, 1948 = 100, unless otherwise specified)

Item	1950			1955			1960			1965			1969		
	Total	Czech Lands	Slovakia	Total	Czech Lands	Slovakia	Total	Czech Lands	Slovakia	Total	Czech Lands	Slovakia	Total	Czech Lands	Slovakia
Population (as of July 1)	100	100	100	106	105	108	111	109	116	115	110	127	117	111	131
Employment[1]	101	101	100	107	107	107	109	112	103	117	119	112	125	124	126
Productive sphere	(NA)	(NA)	(NA)	105	106	102	104	108	95	107	110	98	112	113	109
Agriculture[2]	92	94	89	86	86	87	66	69	61	56	61	50	53	55	50
Industry	102	100	114	118	116	135	138	132	175	151	141	215	160	144	256
Wageworkers[3]	104	103	109	116	115	126	138	133	161	148	139	195	154	140	229
Nonproductive sphere	(NA)	(NA)	(NA)	126	118	158	144	134	185	186	171	249	214	194	296
Gross material product[4]	126	(NA)	(NA)	183	(NA)	(NA)	267	(NA)	(NA)	319	(NA)	(NA)	[5]392	(NA)	(NA)
National income[4]	121	(NA)	(NA)	178	(NA)	(NA)	251	(NA)	(NA)	277	(NA)	(NA)	[5]344	(NA)	(NA)
Industry (percent of total)	61.7	(NA)	(NA)	64.3	(NA)	(NA)	70.0	(NA)	(NA)	68.9	(NA)	(NA)	[5]60.8	(NA)	(NA)
Agriculture (percent of total)	19.4	(NA)	(NA)	12.2	(NA)	(NA)	7.8	(NA)	(NA)	8.9	(NA)	(NA)	[5]11.4	(NA)	(NA)
National income per capita[4]	121	(NA)	(NA)	168	(NA)	(NA)	227	(NA)	(NA)	241	(NA)	(NA)	[5]307	(NA)	(NA)
Gross value of industrial output	132	(NA)	144	224	216	275	372	349	523	480	439	753	613	542	1,090
Labor productivity per industrial-production worker	127	(NA)	133	191	188	215	268	260	318	323	314	382	395	382	468
Gross value of agricultural output[6]	113	114	110	126	124	130	136	132	147	132	130	137	166	158	185
Labor productivity per permanently active person in agriculture	123	121	124	147	144	149	206	191	241	236	213	274	311	285	368
Investments, total[7]	157	152	171	249	240	271	464	463	468	513	488	572	722	694	797
Productive sphere[7]	164	163	168	234	229	248	498	496	503	565	530	655	785	735	913
Agriculture[7]	284	326	246	805	1,104	257	1,817	2,451	1,228	1,619	2,274	1,011	1,918	2,716	1,177
Industry[7]	153	153	152	184	180	199	401	397	412	472	417	649	594	521	829
Nonproductive sphere	142	126	175	281	264	313	392	385	406	403	392	425	588	587	591
Average monthly wages in the socialist sector[8]	115	116	112	146	146	150	166	165	174	181	180	192	228	226	244
Agriculture[8]	(NA)	(NA)	(NA)	100	100	100	124	123	125	146	147	143	199	201	194
Industry	(NA)	(NA)	(NA)	100	100	100	112	112	113	122	123	123	147	148	150

NA Not available.

[1] Based on annual average figures.
[2] Based on numbers of permanently active persons.
[3] Covers only those wageworkers who are included in the industrial-production personnel category.
[4] Until 1960, in 1955 prices; from 1961 to 1966, in 1960 prices; and since 1967, in 1967 prices.
[5] As of 1968.
[6] In 1967 prices, except for 1950, which is in 1960 prices.
[7] In 1967 prices.
[8] Excluding collective farms. In 1965 and 1969, also excluding persons with minor work obligations and women on regular and extended maternity leave.

Source: Based on unadjusted, official data in Stat. roč. 1966, pp. 22-33, 46-51, and Stat. roč. 1970, pp. 22-31, 42-49, and 58-65.

Table II. POPULATION AND VITAL RATES, BY REGION: 1921 TO 1970

(Absolute numbers in thousands as of July 1; rates, per thousand population. All figures are for the present territory of Czechoslovakia except as follows: those for the years 1921-38 include the population of Slovakian villages ceded to the U.S.S.R. in 1945; those for the years 1921-45 exclude the population in the Bratislava Bridgehead acquired from Hungary in 1947. Figures may not add to totals due to rounding)

Year	Population			Vital rates								
				Czechoslovakia			Czech Lands			Slovakia		
	Total	Czech Lands	Slovakia	Birth	Death	Natural increase	Birth	Death	Natural increase	Birth	Death	Natural increase
1921	13,008	10,002	3,006	28.6	17.3	11.3	25.7	16.1	9.6	38.2	21.1	17.1
1930	13,964	10,648	3,315	21.8	13.9	7.9	19.5	13.4	6.1	29.2	15.8	13.4
1937	14,429	10,889	3,540	16.3	13.1	3.2	14.3	12.8	1.5	22.6	14.0	8.6
1945	14,152	10,693	3,459	19.5	17.8	1.7	18.2	17.3	0.9	23.7	19.5	4.2
1950	12,389	8,925	3,463	23.3	11.5	11.8	21.1	11.6	9.5	28.8	11.5	17.3
1951	12,532	9,023	3,509	22.8	11.4	11.4	20.6	11.4	9.2	28.7	11.5	17.2
1952	12,683	9,125	3,558	22.2	10.6	11.6	19.7	10.7	9.0	28.3	10.4	17.9
1953	12,820	9,221	3,599	21.2	10.5	10.7	18.7	10.7	8.0	27.5	9.9	17.6
1954	12,952	9,291	3,661	20.6	10.4	10.2	18.1	10.7	7.4	26.8	9.5	17.3
1955	13,093	9,366	3,727	20.3	9.6	10.7	17.7	10.0	7.7	26.6	8.8	17.8
1956	13,229	9,442	3,787	19.8	9.6	10.2	17.2	9.9	7.3	26.3	8.7	17.6
1957	13,358	9,514	3,844	18.9	10.1	8.8	16.3	10.4	5.9	25.3	9.3	16.0
1958	13,474	9,575	3,900	17.4	9.3	8.1	14.8	9.8	5.0	23.9	8.2	15.7
1959	13,565	9,619	3,946	16.0	9.7	6.3	13.4	10.1	3.3	22.3	8.6	13.7
1960	13,654	9,660	3,994	15.9	9.2	6.7	13.3	9.7	3.6	22.1	7.9	14.2
1961	13,780	9,588	4,192	15.8	9.2	6.6	13.7	9.9	3.8	20.8	7.5	13.3
1962	13,860	9,622	4,238	15.7	10.0	5.7	13.9	10.8	3.1	19.8	8.1	11.7
1963	13,952	9,669	4,283	16.9	9.5	7.4	15.4	10.4	5.0	20.4	7.7	12.7
1964	14,058	9,730	4,328	17.2	9.6	7.6	15.9	10.5	5.4	20.1	7.6	12.5
1965	14,159	9,785	4,374	16.4	10.0	6.4	15.1	10.7	4.4	19.3	8.2	11.1
1966	14,240	9,826	4,414	15.6	10.0	5.6	14.4	10.8	3.6	18.5	8.2	10.3
1967	14,305	9,853	4,452	15.1	10.1	5.0	14.0	11.1	2.9	17.4	8.0	9.4
1968	14,362	9,877	4,485	14.9	10.7	4.2	13.9	11.6	2.3	17.0	8.5	8.5
1969	14,418	9,898	4,520	15.5	11.2	4.3	14.5	12.2	2.3	17.6	9.0	8.6
1970	14,467	9,913	4,555	15.9	11.5	4.4	15.1	12.6	2.5	17.9	9.3	8.5

Source:
1921-56: Stat. roč. 1957, pp. 47-48.
1957-69: Stat. roč. 1970, pp. 90-91.
1970: Stat. přeh., No. 3, 1971, p. 76, and "The Development," 1971, p. 179.

Table III. POPULATION BY AGE, SEX, AND REGION: 1921 TO 1970

(Absolute numbers in thousands. All data are for the present territory, with minor exceptions as described in headnote to table II. Data for the years 1921-61 are from censuses, as follows: 1921 (February 15); 1950 and 1961 (March 1). Those for 1968 and 1970 are estimates as of July 1. Figures may not add to totals due to rounding)

Region and year	Both sexes				Male				Female			
	All ages	0-14 years	15-54/59 years[1]	55/60 years and over	All ages	0-14 years	15-59 years[1]	60 years and over	All ages	0-14 years	15-54 years[1]	55 years and over
CZECHOSLOVAKIA												
1921.....	13,003	3,760	7,732	1,511	6,260	1,893	3,815	552	6,744	1,867	3,918	960
1950.....	12,338	3,134	7,429	1,776	5,997	1,591	3,774	631	6,342	1,543	3,655	1,144
1961.....	13,746	3,743	7,676	2,326	6,705	1,912	3,998	794	7,041	1,831	3,678	1,532
1968.....	14,362	3,428	8,139	2,796	7,009	1,754	4,270	985	7,353	1,674	3,869	1,811
1970.....	14,467	3,335	8,243	2,889	7,057	1,703	4,314	1,040	7,411	1,632	3,929	1,849
CZECH LANDS												
1921.....	10,010	2,783	6,040	1,187	4,803	1,402	2,972	429	5,206	1,381	3,067	758
1950.....	8,896	2,138	5,400	1,358	4,326	1,087	2,757	482	4,570	1,052	2,643	876
1961.....	9,572	2,429	5,394	1,749	4,641	1,242	2,810	589	4,931	1,187	2,583	1,161
1968.....	9,877	2,155	5,646	2,076	4,792	1,104	2,970	718	5,085	1,051	2,676	1,358
1970.....	9,913	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
SLOVAKIA												
1921.....	2,994	978	1,692	324	1,456	491	842	123	1,538	486	850	201
1950.....	3,442	995	2,029	417	1,671	505	1,017	149	1,771	491	1,012	268
1961.....	4,174	1,315	2,283	577	2,064	671	1,188	206	2,110	644	1,095	371
1968.....	4,485	1,272	2,493	719	2,217	650	1,300	267	2,268	622	1,193	453
1970.....	4,555	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
PERCENT DISTRIBUTION												
CZECHOSLOVAKIA												
1921.....	100.0	28.9	59.5	11.6	100.0	30.2	60.9	8.8	100.0	27.7	58.1	14.2
1950.....	100.0	25.4	60.2	14.4	100.0	26.5	62.9	10.5	100.0	24.3	57.6	18.0
1961.....	100.0	27.2	55.8	16.9	100.0	28.5	59.6	11.8	100.0	26.0	52.2	21.8
1968.....	100.0	23.9	56.7	19.5	100.0	25.0	60.9	14.1	100.0	22.8	52.6	24.6
1970.....	100.0	23.1	57.0	20.0	100.0	24.1	61.1	14.7	100.0	22.0	53.0	25.0
CZECH LANDS												
1921.....	100.0	27.8	60.3	11.9	100.0	29.2	61.9	8.9	100.0	26.5	58.9	14.6
1950.....	100.0	24.0	60.7	15.3	100.0	25.1	63.7	11.1	100.0	23.0	57.8	19.2
1961.....	100.0	25.4	56.3	18.3	100.0	26.8	60.6	12.7	100.0	24.1	52.4	23.5
1968.....	100.0	21.8	57.2	21.0	100.0	23.0	62.0	15.0	100.0	20.7	52.6	26.7
1970.....	100.0	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
SLOVAKIA												
1921.....	100.0	32.7	56.5	10.8	100.0	33.7	57.8	8.4	100.0	31.6	55.3	13.1
1950.....	100.0	28.9	59.0	12.1	100.0	30.2	60.9	8.9	100.0	27.7	57.1	15.1
1961.....	100.0	31.5	54.7	13.8	100.0	32.5	57.6	10.0	100.0	30.5	51.9	17.6
1968.....	100.0	28.4	55.6	16.0	100.0	29.3	58.6	12.0	100.0	27.4	52.6	20.0
1970.....	100.0	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)

NA Not available. X Not applicable.

[1] In Czechoslovak practice, the working ages refer to males 15 to 59 years old and females 15 to 54 years old.

Source:
1921: Stat. přír. II, 1925, pp. 382-383.
1950: Stat. roč. 1959, pp. 55-57.
1961: Stat. roč. 1963, p. 68, and Srb, Demografická 1966, 1967, pp. 47-49.
1968: Stat. roč. 1970, p. 85.
1970: Table XIII.

Table IV. ECONOMICALLY ACTIVE POPULATION, BY SEX AND REGION: 1921 TO 1970

(Absolute numbers in thousands. All data are for the present territory, with minor exception as described in headnote to table II. Figures may not add to totals due to rounding)

Region and year	Both sexes	Male	Female	Percent of total population			Percent of working-age population[1]		
				Both sexes	Male	Female	Both sexes	Male	Female
CZECHOSLOVAKIA									
1921	5,604	3,680	1,924	43.1	58.8	28.5	72.5	96.5	49.1
1930	6,519	4,488	2,031	46.6	66.1	28.1	(NA)	(NA)	(NA)
1950	5,812	3,568	2,244	47.1	59.5	35.4	78.2	94.5	61.4
1961	6,483	3,823	2,660	47.2	57.0	37.8	84.5	95.6	72.3
1970	7,223	4,177	3,046	49.9	59.2	41.1	87.6	96.8	77.5
CZECH LANDS									
1921	4,412	2,796	1,616	44.1	58.2	31.0	73.0	94.1	52.7
1930	5,129	(NA)	(NA)	48.1	(NA)	(NA)	(NA)	(NA)	(NA)
1950	4,068	2,573	1,495	45.7	59.5	32.7	75.3	93.3	56.6
1961	4,707	2,681	2,026	49.2	57.8	41.1	87.3	95.4	78.4
1970	(NA)	(NA)	(NA)	(X)	(X)	(X)	(X)	(X)	(X)
SLOVAKIA									
1921	1,192	885	308	39.8	60.8	20.0	70.4	105.1	36.2
1930	1,390	(NA)	(NA)	41.8	(NA)	(NA)	(NA)	(NA)	(NA)
1950	1,744	995	749	50.7	59.5	42.3	86.0	97.8	74.0
1961	1,776	1,142	634	42.5	55.3	30.1	77.8	96.1	57.9
1970	(NA)	(NA)	(NA)	(X)	(X)	(X)	(X)	(X)	(X)

NA Not available. X Not applicable

NOTE: Data for the years 1921-61 are from censuses as follows: 1921 (February 15); 1930 (December 1); 1950 and 1961 (March 1). Data for 1970 are estimated as of July 1. Figures for the years 1921-50 have been adjusted when possible to allow for changes in classification which occurred during the period. These changes involved primarily the exclusion of rentiers, pensioners, and students living away from home from the economically active population in the prewar censuses. Their number was 683,000 in 1921 (596,000 in the Czech Lands and 87,000 in Slovakia) and 802,000 in 1930 (709,000 in the Czech Lands and 93,000 in Slovakia).

[1] In Czechoslovak practice, the working ages refer to males 15 to 59 years and females 15 to 54 years old.

Source:

Economically active population:
1921: Stat. přír. IV, 1932, pp. 14-15.
1930: Based on Stat. roč. 1936, pp. 11-17.
1950 and 1961: Marček et al., Polstoročie, 1969, pp. 66, 69.
1970: Table 14.

Percent of total and working-age populations: Computed from figures in columns 1-3 and data in table III. The population total for each of the two regions and the population by sex for the country as a whole, for 1930, are from Stat. roč. 1936, p. 6.

Table V. LABOR FORCE PARTICIPATION RATES, BY AGE, SEX, AND REGION: 1950, 1961, AND 1970

Age and sex	Czechoslovakia			Czech Lands		Slovakia	
	1950	1961	1970	1950	1961	1950	1961
MALE							
15 to 19 years	76.2	47.4	46.5		46.1		48.2
20 to 24 years		93.4	93.4		94.0		93.3
25 to 29 years		98.2	98.2		98.7		97.6
30 to 34 years		98.9	98.9		99.2		98.2
35 to 39 years		97.8	97.8		98.7		97.4
40 to 44 years	88.2	97.1	97.1	(NA)	97.5	(NA)	96.9
45 to 49 years		96.1	96.1		96.3		95.5
50 to 54 years		92.9	93.8		93.4		92.5
55 to 59 years		84.8	89.3		84.7		86.6
60 to 64 years		51.1	55.6		46.1		64.8
65 years and over	24.7	24.8	24.8		22.9		29.7
FEMALE							
15 to 19 years	65.8	56.1	51.6	64.0	56.7	69.3	51.3
20 to 24 years	62.3	69.2	69.2	60.5	72.3	66.4	63.1
25 to 29 years	47.5	57.9	64.5	43.6	62.1	57.0	49.3
30 to 34 years	45.9	59.6	66.6	41.0	65.1	58.2	47.3
35 to 39 years	48.7	65.9	73.8	43.9	71.7	62.0	52.0
40 to 44 years	51.7	68.1	76.0	47.4	74.1	64.3	53.6
45 to 49 years	52.0	66.6	74.5	47.7	72.5	65.1	50.3
50 to 54 years	48.3	60.0	67.0	43.5	65.6	63.2	43.6
55 to 59 years	41.5	43.1	43.1	36.3	46.0	59.0	34.0
60 to 64 years	17.9	30.3	30.3	14.0	16.4	30.4	12.8
65 years and over		7.8	7.8				

NA Not available.

Source:

Czechoslovakia

1950:

Males: International Labour Office, Year Book, 1966, p. 30

Females: Ústřední, Vývoj, 1965, p. 78.

1961:

Males: Information, 1963, p. 26. A first approximation of these rates was derived by making readings of the rates from a line graph given in the source. These initial rates were then multiplied by the relevant population figures from the 1961 census results, and adjusted to yield the reported census total of economically active males (table IV).

Females: United Nations, Demographic Yearbook, 1968, p. 300, and International Labour Office, Year Book, 1969, p. 32.

1970: Estimated by adjusting the 1961 rates to yield the total number of persons estimated to be economically active as of July 1, 1970 (table VI). The rates were applied to the relevant age-sex population figures given in table XIII. Adjustments to the 1961 rates were made as follows:

Males:

15 to 19 years: Reduced by 0.1 percentage point per year to allow for increased enrollment in secondary and vocational-technical schools.

20 to 49 years, and 65 years and over: The 1961 LFPR's were held constant.

50 to 54 years: Increased by 0.1 percentage point per year, on the basis of comparison with rates for other Eastern European countries as given in International Labour Office, Year Book, 1969, pp. 31-38.

55 to 64 years: Increased by 0.5 percentage point per year, on the basis of comparison with rates for other Eastern European countries as given in International Labour Office, Year Book, 1969, pp. 31-38.

Females:

15 to 19 years: Reduced by 0.1 percentage point per year to allow for increased enrollment in secondary and vocational-technical schools.

20 to 24 years, and 55 years and over: The 1961 LFPR's were held constant.

25 to 54 years: Adjusted upward proportionately to yield the difference between the independently estimated total for July 1, 1970 (table VI) and the sum of the economically active in all other female and male age groups.

Czech Lands and Slovakia

1950:

Females: Ústřední, Vývoj, 1965, p. 78.

1961:

Males: Derived from the same source and in the same manner as described above for the 1961 male rates in Czechoslovakia.

Females: Ústřední, Vývoj, 1965, p. 78.

Table VI. ESTIMATED TOTAL, WORKING-AGE, AND ECONOMICALLY ACTIVE POPULATIONS: 1950 TO 1970

(In thousands. As of July 1. Figures may not add to totals due to rounding)

Year	Total population			Population of working ages			Economically active population				
	Both sexes	Male	Female	Both sexes	Male (15-59 years)	Female (15-54 years)	Total	Agricultural branches	Nonagricultural branches		
									Total	Industry	Other
1950	12,389	6,017	6,372	7,429	3,772	3,657	5,832	2,188	3,644	1,823	1,821
1955	13,093	6,378	6,715	7,483	3,851	3,632	6,257	2,113	4,144	2,078	2,066
1956	13,229	6,447	6,782	7,504	3,872	3,632	6,358	2,093	4,265	2,125	2,140
1957	13,358	6,512	6,846	7,530	3,895	3,635	6,419	2,024	4,395	2,201	2,194
1958	13,474	6,571	6,903	7,564	3,922	3,642	6,430	1,977	4,453	2,219	2,234
1959	13,565	6,617	6,948	7,601	3,948	3,653	6,386	1,837	4,549	2,264	2,285
1960	13,654	6,662	6,992	7,633	3,968	3,665	6,396	1,681	4,715	2,377	2,338
1961	13,780	6,722	7,058	7,707	4,016	3,691	6,503	1,598	4,905	2,446	2,459
1962	13,860	6,762	7,098	7,770	4,053	3,717	6,593	1,549	5,044	2,494	2,550
1963	13,952	6,807	7,144	7,840	4,094	3,746	6,688	1,531	5,157	2,496	2,661
1964	14,058	6,860	7,198	7,899	4,131	3,768	6,774	1,499	5,275	2,523	2,752
1965	14,159	6,911	7,248	7,960	4,169	3,791	6,857	1,471	5,386	2,567	2,819
1966	14,240	6,950	7,290	8,026	4,207	3,819	6,940	1,464	5,476	2,638	2,838
1967	14,305	6,981	7,324	8,086	4,241	3,845	7,018	1,435	5,583	2,660	2,923
1968	14,362	7,009	7,353	8,139	4,270	3,869	7,089	1,411	5,678	2,696	2,982
1969	14,418	7,035	7,383	8,187	4,294	3,893	7,159	1,395	5,764	2,715	3,049
1970	14,467	7,057	7,411	8,243	4,314	3,929	7,223	1,371	5,852	2,712	3,140

Source:

Total population:

1950, 1955-65: Srb, Demografická 1966, 1967, pp. 37, 41.

1966-68: Stat. roč. 1969, p. 84

1969: Stat. roč. 1970, p. 84.

1970: Stat. přeh., no. 9/10, 1970, p. 184. Estimates by sex were based on the ratio computed from an estimated age-sex distribution for midyear 1970.

Population of working-age:

1950, 1955-57: Based on midyear distributions by age and sex for these years reported in Srb, Demografická 1966, 1967, p. 50, and the distributions by age and sex for March 1, 1950, January 1, 1956, January 1, 1957, and January 1, 1958, reported in Stat. roč. 1959, pp. 55 and 58.

1958-59: United Nations, Demographic Yearbook, 1960, pp. 222-223, and United Nations, Demographic Yearbook, 1961, pp. 152-153.

1960: Based on the midyear distribution by age and sex reported in Srb, Demografická 1966, 1967, p. 50, and the distributions by age and sex for the beginning and end of the year reported in Stat. roč. 1961, p. 75, and Stat. roč. 1963, p. 109.

1961-68: Stat. roč. 1963, p. 109; Stat. roč. 1964, p. 117; Stat. roč. 1965, p. 85; Stat. roč. 1966, p. 75; Stat. roč. 1967, p. 75; Stat. roč. 1968, p. 91; Stat. roč. 1969, p. 85; and Stat. roč. 1970, p. 85.

1969-70: Derived from estimated age-sex distributions for July 1, 1969, and July 1, 1970. The figures were adjusted to agree with total population figures reported for 1969 and 1970.

Economically active population:

Total:

1950: Based on International Labour Office, Year Book, 1966, pp. 112-113.

1955-60: Based on interpolation of the ratios of the annual average numbers of persons employed to the economically active populations in 1950 and 1961, and the annual average numbers employed during the indicated years. For numbers employed see table V.

1961: Based on International Labour Office, Year Book, 1970, pp. 126-127.

1962-70: Based on extrapolation of the ratios of the economically active population to the population of working age in 1950 and 1961 and the working age population for the indicated years.

Agricultural branches:

1950: Based on International Labour Office, Year Book, 1966, pp. 112-113.

1955-60: Based on interpolation of the ratios of the annual average numbers employed in agriculture and forestry to the economically active population in agriculture and forestry in 1950 and 1961, and the annual average numbers employed in agriculture and forestry in the indicated years reported in Stat. roč. 1962, p. 113.

1961: Based on International Labour Office, Year Book, 1970, pp. 126-127.

1962-69: Based on the 1961 ratio of the annual average number employed in agriculture and forestry to the economically active population in agriculture and forestry and the annual average numbers employed in agriculture and forestry during the indicated years reported in various issues of Stat. roč.

1970: Based on the assumption that the decline in the annual average number employed in agriculture from midyear 1968 to midyear 1970 was equal to the decline from the beginning of 1968 to the beginning of 1970 (37,000). See Stat. roč. 1970, pp. 119 and 294. The decline in the economically active population was estimated to be slightly larger.

Nonagricultural branches:

All years: Residual.

Industry:

1950: Based on International Labour Office, Year Book, 1966, pp. 112-113.

1955-60: Based on interpolation of the ratios of the annual average numbers employed in industry to the economically active population in industry in 1950 and 1961, and the annual average numbers employed in industry during the indicated years reported in Stat. roč. 1962, p. 113.

1961: Based on International Labour Office, Year Book, 1970, pp. 126-127.

1962-69: Based on the ratio of the annual average number employed in industry to the economically active population in industry in 1961 and the annual average numbers employed in industry during the indicated years reported in various issues of Stat. roč.

1970: Based on the decline of 0.1 percent in the annual average number employed in industry from midyear 1969 to midyear 1970, reported in Stat. přeh. no. 5/6, 1970, p. 97.

Other nonagricultural branches:

All years: Residual.

Table VII. EMPLOYED POPULATION, BY BRANCH OF THE ECONOMY AND REGION: 1948 TO 1969

(Annual averages in thousands. Apprentices are not included)

Branch of the economy and region	1948	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
CZECHOSLOVAKIA																					
Total	5,545	5,577	5,591	5,600	5,683	5,850	5,956	6,047	6,100	6,113	6,058	6,063	6,159	6,260	6,311	6,374	6,477	6,608	6,686	6,794	6,916
Agriculture	2,239	2,058	1,922	1,850	1,858	1,898	1,933	1,894	1,822	1,764	1,623	1,468	1,380	1,334	1,316	1,289	1,262	1,257	1,227	1,207	1,192
Industry	1,640	1,674	1,778	1,815	1,846	1,911	1,942	1,994	2,075	2,099	2,150	2,263	2,335	2,409	2,411	2,437	2,480	2,549	2,570	2,605	2,623
Construction	253	352	377	395	406	409	404	426	438	463	496	501	521	520	506	509	521	541	557	576	585
Transportation and communications	280	287	294	308	316	328	336	347	357	368	361	367	379	339	400	409	418	427	436	445	476
Trade and public dining	370	391	385	383	384	396	410	412	413	409	411	416	431	437	453	460	460	463	466	499	530
Health services and social care	91	106	119	133	141	150	153	159	166	167	167	178	184	193	200	205	215	224	235	244	258
Education and culture	138	163	184	200	216	225	237	242	254	262	271	286	313	327	342	358	380	390	398	407	420
Other branches[1]	534	546	532	516	516	533	541	573	575	581	579	584	616	651	683	707	741	757	797	811	832
CZECH LANDS																					
Total	4,019	4,046	4,050	4,056	4,125	4,248	4,316	4,380	4,434	4,465	4,448	4,492	4,580	4,653	4,681	4,718	4,768	4,848	4,873	4,926	4,996
Agriculture	1,321	1,239	1,148	1,089	1,103	1,116	1,133	1,100	1,056	1,042	974	906	872	848	839	825	800	796	771	752	732
Industry	1,409	1,411	1,495	1,521	1,545	1,605	1,630	1,668	1,735	1,743	1,776	1,858	1,903	1,958	1,946	1,961	1,983	2,030	2,014	2,029	2,032
Construction	160	229	245	260	280	285	283	303	313	331	356	359	373	366	355	353	358	370	381	395	400
Transportation and communications	215	220	225	235	236	246	247	258	261	271	263	267	273	279	287	292	299	304	311	318	337
Trade and public dining	307	319	308	310	307	318	324	326	322	322	324	329	340	342	353	352	352	346	349	373	397
Health services and social care	78	88	95	106	111	116	117	122	126	126	125	134	137	144	149	151	157	162	169	174	183
Education and culture	113	130	139	152	163	167	178	180	193	196	198	208	227	234	243	253	264	271	276	279	283
Other branches[1]	416	410	395	383	380	395	404	423	428	434	432	431	455	482	509	531	555	569	602	606	632
SLOVAKIA																					
Total	1,526	1,531	1,541	1,544	1,558	1,602	1,640	1,667	1,666	1,648	1,610	1,571	1,579	1,607	1,630	1,656	1,709	1,760	1,813	1,868	1,920
Agriculture	918	819	774	761	755	782	800	794	766	722	649	562	508	486	477	464	462	461	456	455	460
Industry	231	263	283	294	301	306	312	326	340	356	374	405	432	451	465	476	497	519	556	576	591
Construction	93	123	132	135	126	124	121	123	125	132	140	142	148	154	151	156	163	171	176	181	185
Transportation and communications	65	67	69	73	80	82	89	89	96	97	98	100	106	110	113	117	119	123	125	127	133
Trade and public dining	63	72	77	73	77	78	86	86	91	87	87	87	91	95	100	108	108	117	117	126	133
Health services and social care	13	18	24	27	30	34	36	37	40	41	42	44	47	49	51	54	58	62	66	70	75
Education and culture	25	33	45	48	53	58	59	62	61	66	73	78	86	93	99	105	116	119	122	128	132
Other branches[1]	118	136	137	133	136	138	137	150	147	147	147	153	161	169	174	176	186	188	195	205	211

[1] Includes forestry, material-technical supply, procurement of agricultural products, science and research, communal services, housing economy, administration and justice, banking and insurance, social organizations, and an unspecified residual.

Source:

1948-56: Stat. roč. 1966, pp. 22-23, and 46-47.
1957-69: Stat. roč. 1970, pp. 22-23, 42-43, and 58-59.

Table VIII. WAGEWORKERS IN INDUSTRY, BY BRANCH AND REGION: 1950 TO 1969

(Annual averages[1] in thousands. Based on establishment-concept data)

Branch of industry and region	1950	1955	1960	1961	1962	1963	1964	1965	1966	1967[2]	1968[2]	1969[2]
CZECHOSLOVAKIA												
Total	1,322	1,484	1,756	1,804	1,842	1,832	1,840	1,881	1,928	1,936	1,949	1,963
Group A (production of producers' goods)[3]	728	880	1,050	1,077	1,108	1,108	1,115	1,140	1,166	1,190	1,194	1,183
Group B (production of consumers' goods)[3]	594	604	706	727	734	724	725	741	762	746	755	780
Fuel	122	137	156	158	165	168	171	172	164	151	140	138
Electric and thermal power production	19	23	25	25	26	26	27	28	29	29	29	30
Ferrous metallurgy (including ore extraction)	79	102	123	127	132	135	136	138	142	143	142	143
Nonferrous metallurgy (including ore extraction)	21	20	25	26	26	27	27	27	28	29	30	[4]26
Chemical and rubber-asbestos	45	54	70	73	76	78	80	82	86	89	91	92
Machine-building and metalworking	325	455	566	588	607	605	609	628	653	673	689	694
Construction materials	64	74	88	87	85	81	79	81	84	80	80	79
Woodworking	77	85	92	94	97	95	94	96	98	100	101	101
Cellulose and paper	23	27	31	31	31	31	31	31	31	32	33	33
Glass, porcelain, and ceramic	44	39	50	52	54	54	55	57	59	60	62	63
Textile	180	169	191	194	195	189	186	189	192	189	187	186
Sewn goods	79	75	82	86	86	83	83	86	87	88	89	94
Leather, footwear, and fur	62	52	71	75	76	74	75	79	82	81	83	87
Printing	26	23	25	25	26	25	25	26	27	24	24	30
Food	147	138	146	147	144	145	145	143	148	148	149	150
Other	9	11	15	16	16	16	17	18	18	20	20	17
CZECH LANDS												
Total	1,114	1,243	1,445	1,477	1,503	1,491	1,485	1,506	1,530	1,523	1,521	1,521
Group A (production of producers' goods)	613	736	865	888	910	909	907	920	932	939	934	925
Group B (production of consumers' goods)	501	507	580	589	593	582	578	586	598	584	587	596
Fuel	114	127	143	144	150	153	155	155	147	135	124	123
Electric and thermal power production	16	19	20	20	21	21	21	22	23	22	22	23
Ferrous metallurgy (including ore extraction)	69	90	110	114	117	120	119	119	119	117	115	115
Nonferrous metallurgy (including ore extraction)	16	10	11	12	12	12	12	11	12	13	14	18
Chemical and rubber-asbestos	35	43	52	54	55	57	57	58	60	61	61	60
Machine-building and metalworking	290	401	486	501	515	511	511	523	539	550	559	550
Construction materials	41	48	58	57	56	53	51	52	54	51	51	50
Woodworking	56	63	67	67	69	67	65	66	67	68	69	68
Cellulose and paper	17	21	23	23	23	23	23	23	23	24	24	23
Glass, porcelain, and ceramic	42	37	47	49	51	51	52	53	55	55	56	57
Textile	157	148	165	167	167	162	158	160	162	159	157	155
Sewn goods	61	57	61	63	63	60	59	61	60	61	61	64
Leather, footwear, and fur	51	42	55	58	58	56	57	59	60	59	60	63
Printing	23	20	22	22	23	22	21	22	23	20	20	24
Food	118	109	113	113	110	110	110	108	111	110	110	112
Other	8	8	12	13	13	13	14	14	15	18	18	16
SLOVAKIA												
Total	208	241	311	327	339	341	355	375	398	413	428	442
Group A (production of producers' goods)	115	144	185	189	198	199	208	220	234	251	260	258
Group B (production of consumers' goods)	93	97	126	138	141	142	147	155	164	162	168	184
Fuel	8	10	13	14	15	15	16	17	17	16	16	15
Electric and thermal power production	3	4	5	5	5	5	6	6	6	7	7	7
Ferrous metallurgy (including ore extraction)	10	12	13	13	15	15	17	19	23	26	27	28
Nonferrous metallurgy (including ore extraction)	5	10	14	14	14	15	15	16	16	16	16	[4]8
Chemical and rubber-asbestos	10	11	18	19	21	21	23	24	26	28	30	32
Machine-building and metalworking	35	54	80	87	92	94	98	105	114	123	130	144
Construction materials	23	26	30	30	29	28	28	29	30	29	29	29
Woodworking	21	22	25	27	28	28	29	30	31	32	32	33
Cellulose and paper	6	6	8	8	8	8	8	8	8	8	9	10
Glass, porcelain, and ceramic	2	2	3	3	3	3	3	4	4	5	6	6
Textile	23	21	26	27	28	27	28	29	30	30	30	31
Sewn goods	18	18	21	23	23	23	24	25	27	27	28	30
Leather, footwear, and fur	11	10	16	17	18	18	18	20	22	22	23	24
Printing	3	3	3	3	3	3	4	4	4	4	4	6
Food	29	29	33	34	34	35	35	35	37	38	39	38
Other	1	3	3	3	3	3	3	4	3	2	2	1

NA Not available.

[1] Presumed to be annual averages. A textual definition on page 216 of Stat. roč. 1970 states that these figures are annual averages, but the headnote to the source table on p. 236 of this handbook suggests that they may be "physical persons."

[2] Data for the years 1967-68 reported in Stat. roč. 1970 were revised slightly from those reported in Stat. roč. 1969; these figures for the years 1967-69 probably represent minor adjustments due to a change in the classification system.

[3] In Czechoslovak practice, the classification of wageworkers in either group A or B is based on that for the individual enterprise in which employed. The enterprise is classified on the basis of gross value of output. Individual branch totals therefore cannot be separated into groups A and B.

[4] The decline from 1968 is probably due to the reclassification of some plants engaged in nonferrous metallurgy in Slovakia which belong to parent establishments with headquarters in the Czech Lands. It may also involve an interbranch reclassification within Slovakia.

Source:
1950-66: Stat. roč. 1967, pp. 208-210.
1967-68: Stat. roč. 1969, p. 239.
1969: Stat. roč. 1970, p. 236.

Table IX. EMPLOYED POPULATION IN INDUSTRY, BY CLASS OF WORKER AND REGION: 1950 TO 1969

(Annual averages[1] in thousands. Based on establishment-concept data. Apprentices are not included)

Class of worker and region	1950	1955	1960	1961	1962	1963	1964	1965[2]	1966[2]	1967[2]	1968[2]	1969[2]
CZECHOSLOVAKIA												
Total	1,659	1,979	2,327	2,412	2,484	2,492	2,507	2,563	2,630	[3]2,660	2,693	2,717
Industrial-production personnel	1,572	1,884	2,199	2,274	2,337	2,339	2,350	2,397	2,459	2,487	2,515	2,535
Wageworkers	1,322	1,484	1,756	1,804	1,842	1,832	1,840	1,882	1,929	1,945	1,957	1,963
Engineering-technical personnel	(NA)	208	249	269	289	299	305	311	323	335	349	361
Salaried employees	(NA)	138	136	141	144	145	141	138	140	141	141	140
Other	(NA)	54	58	60	62	63	64	66	67	66	68	71
Nonindustrial personnel	(NA)	95	128	138	147	153	157	166	171	173	178	182
CZECH LANDS												
Total	1,414	1,653	1,917	1,977	2,029	2,030	2,027	2,055	2,091	[3]2,099	2,109	2,113
Industrial-production personnel	(NA)	1,579	1,812	1,864	1,908	1,905	1,900	1,921	1,953	1,959	1,966	1,968
Wageworkers	1,114	1,243	1,445	1,477	1,503	1,491	1,485	1,506	1,530	1,530	1,526	1,521
Engineering-technical personnel	(NA)	176	208	223	238	245	249	251	258	266	275	282
Salaried employees	(NA)	116	113	116	118	119	115	112	113	113	113	112
Other	(NA)	44	46	48	49	50	51	52	52	50	52	53
Nonindustrial personnel	(NA)	74	105	113	121	125	127	134	138	140	143	145
SLOVAKIA												
Total	245	326	410	435	455	462	480	508	539	[3]561	584	604
Industrial-production personnel	(NA)	305	387	410	429	434	450	476	506	528	549	567
Wageworkers	208	241	311	327	339	341	355	376	399	415	431	442
Engineering-technical personnel	(NA)	32	41	46	51	54	56	60	65	70	74	79
Salaried employees	(NA)	22	23	25	26	26	26	26	27	27	28	28
Other	(NA)	10	12	12	13	13	13	14	15	16	16	18
Nonindustrial personnel	(NA)	21	23	25	26	28	30	32	33	33	35	37

NA Not available.

[1] Presumed to be annual averages. A textual definition on page 216 of Stat. roč. 1970 states that these figures are annual averages, but the headnote to the source table on p. 236 of this handbook suggests that they may be "physical persons."

[2] Data for the years 1966-68 reported in Stat. roč. 1970 were revised slightly from those reported in Stat. roč. 1969 (table VIII); these figures for the years 1965-69 probably represent minor adjustments due to a change in the classification system.

[3] Distribution of these totals by class of worker was based on the distributions reported in Stat. roč. 1969, p. 238, for this year which was made on the basis of the old classification system (see note 2, above).

Source:
1950-55: Stat. roč. 1959, p. 149.
1960-64: Stat. roč. 1967, p. 206.
1965-69: Stat. roč. 1970, p. 235.

Table X. EMPLOYED WOMEN BY BRANCH OF THE ECONOMY: 1955 TO 1969

(In thousands. As of end of year. Figures may not add to totals due to rounding)

Branch of the economy	1955	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969[1]
Total	2,558	2,608	2,692	2,738	2,783	2,848	2,917	2,997	3,053	3,141	3,209
Industry	684	876	926	945	958	991	1,037	1,079	1,089	1,126	1,142
Construction	40	61	64	67	67	68	73	77	82	85	88
Agriculture	1,058	732	695	684	667	649	625	623	610	599	580
Forestry	37	46	40	40	37	38	37	34	36	37	33
Transportation	43	50	54	57	61	63	67	70	74	77	80
Communications	26	38	40	42	44	47	50	53	56	60	62
Trade and public dining	253	289	299	307	325	327	324	325	343	373	401
Material and technical supply	14	15	18	17	19	20	23	23	24	26	26
Procurement of agricultural products	9	10	11	13	14	16	14	15	14	14	16
Science and research	17	31	33	36	41	43	48	49	55	55	59
Communal services	34	41	54	54	60	68	73	74	82	85	85
Housing economy	14	25	29	30	32	33	34	45	43	39	40
Health services and social care	111	132	142	148	153	161	174	179	186	195	206
Education and culture	134	176	193	202	209	223	236	250	257	261	272
Administration and justice	48	43	47	48	47	48	49	51	52	54	58
Banking and insurance	13	15	16	17	18	21	21	21	21	22	23
Social organizations	8	7	8	8	9	8	8	7	6	8	12
Other	15	21	23	23	22	24	24	22	23	25	26

[1] Preliminary data.

Source:
1955-64: Stat. roč. 1965, p. 123.
1965-69: Stat. roč. 1970, p. 123.

Table XI. EMPLOYED SPECIALISTS BY BRANCH OF THE ECONOMY, LEVEL OF EDUCATION, AND TYPE OF TRAINING: 1959 AND 1966

(In thousands. Data for 1959 are as of September 30, those for 1966 are as of October 31. Figures may not add to totals due to rounding)

Branch of the economy	Total		Higher education		Specialized secondary education		Trained in technical subjects						Trained in nontechnical subjects					
							Total		Higher education		Specialized secondary education		Total		Higher education		Specialized secondary education	
	1959	1966	1959	1966	1959	1966	1959	1966	1959	1966	1959	1966	1959	1966	1959	1966	1959	1966
Total	733	1,111	149	225	584	887	272	496	54	90	218	406	461	616	95	135	366	481
Industry	238	391	26	42	212	350	143	265	18	32	125	233	95	126	8	10	87	117
Construction	58	87	13	17	45	70	39	63	10	14	28	49	20	24	2	3	17	21
Agriculture (state sector)	28	39	5	7	23	32	23	34	5	7	18	27	5	5	0	0	5	5
Forestry	12	17	2	3	10	15	11	16	2	3	9	13	1	2	0	0	1	2
Transportation	18	34	2	3	16	31	10	21	1	2	9	19	7	13	1	1	7	12
Communications	7	13	0	1	6	12	2	6	0	0	2	6	4	6	0	0	4	6
Trade and public dining	46	50	7	4	38	45	3	5	0	0	2	5	43	45	7	4	36	41
Material and technical supply	3	11	0	1	3	10	0	4	0	0	0	3	2	8	0	1	2	7
Procurement of agricultural products	5	7	0	0	4	7	1	4	0	0	1	3	4	3	0	0	4	3
Science and research	23	43	11	20	12	24	13	27	7	12	7	15	9	16	4	7	5	8
Communal services	6	12	0	1	6	11	2	3	0	0	2	3	4	8	0	0	4	8
Housing economy	1	4	0	0	1	4	0	1	0	0	0	1	1	2	0	0	1	2
Health services and social care	81	115	21	31	60	84	1	1	0	0	0	1	81	114	21	31	60	83
Education and culture	140	204	44	73	96	130	11	23	6	11	6	12	129	181	39	63	90	118
Administration and justice	42	46	12	15	29	31	11	16	4	6	7	10	31	30	8	9	23	21
Banking and insurance	17	18	1	1	17	16	0	1	0	0	0	1	17	17	1	1	16	16
Social organizations	5	7	2	1	4	6	1	1	0	0	0	2	5	6	2	1	3	5
Other	4	14	1	4	3	11	1	5	0	1	1	4	2	9	1	2	2	7

Source:
1959: Stat. roč. 1960, p. 94.
1966: Stat. roč. 1967, p. 115.

Table XII. LEVEL OF EDUCATION ATTAINED BY PERSONS IN SENIOR POSITIONS ON STATE AND COLLECTIVE FARMS: FEBRUARY 1, 1963

(Percentages may not add to totals due to rounding)

Position	Total	Higher	Secondary-vocational	Elementary	Other	Percent distribution				
						Total	Higher	Secondary-vocational	Elementary	Other
CZECHOSLOVAKIA										
State Farms										
Directors	316	67	117	54	78	100.0	21.2	37.0	17.1	24.7
Chief technicians	204	67	90	12	35	100.0	32.8	44.1	5.9	17.2
Chief economists	241	27	132	20	62	100.0	11.2	54.8	8.3	25.7
Senior technicians	1,191	223	485	191	292	100.0	18.7	40.8	16.0	24.5
Collective Farms										
Chairmen	7,596	251	993	4,616	1,736	100.0	3.3	13.0	60.8	22.9
Agronomists	7,052	464	1,440	3,254	1,894	100.0	6.6	20.4	46.1	26.9
Zootechnicians	8,076	407	1,780	3,895	1,994	100.0	5.0	22.0	48.2	24.8
Mechanization specialists	5,062	62	505	3,300	1,195	100.0	1.2	10.0	65.2	23.6
Economists	7,708	171	2,161	2,345	3,031	100.0	2.2	28.0	30.4	39.4
CZECH LANDS										
State Farms										
Directors	239	45	89	44	61	100.0	18.8	37.2	18.4	25.5
Chief technicians	153	37	78	11	27	100.0	24.2	51.0	7.2	17.6
Chief economists	180	21	112	12	35	100.0	11.7	62.2	6.7	19.4
Senior technicians	948	160	406	150	232	100.0	16.9	42.8	15.8	24.5
Collective Farms										
Chairmen	5,266	181	768	3,094	1,223	100.0	3.4	14.6	58.8	23.2
Agronomists	4,941	292	1,047	2,291	1,311	100.0	5.9	21.2	46.4	26.5
Zootechnicians	5,802	235	1,388	2,804	1,375	100.0	4.1	23.9	48.3	23.7
Mechanization specialists	3,393	53	379	2,206	755	100.0	1.6	11.2	65.0	22.3
Economists	5,402	122	1,486	1,712	2,082	100.0	2.3	27.5	31.7	38.5
SLOVAKIA										
State Farms										
Directors	77	22	28	10	17	100.0	28.6	36.3	13.0	22.1
Chief technicians	51	30	12	1	8	100.0	58.8	23.5	2.0	15.7
Chief economists	61	6	20	8	27	100.0	9.8	32.8	13.1	44.3
Senior technicians	243	63	79	41	60	100.0	25.9	32.5	16.9	24.7
Collective Farms										
Chairmen	2,330	70	225	1,522	513	100.0	3.0	9.7	65.3	22.0
Agronomists	2,111	172	393	963	583	100.0	8.1	18.6	45.6	27.7
Zootechnicians	2,274	172	392	1,091	619	100.0	7.6	17.2	48.0	27.2
Mechanization specialists	1,669	9	126	1,094	440	100.0	0.5	7.5	65.5	26.6
Economists	2,306	49	675	633	949	100.0	2.1	29.3	27.4	41.2

Source: Statistická 1963, pp. 510-511. Figures for the Czech Lands were derived by subtracting those for Slovakia from the total.

Table XIII. ESTIMATED AND PROJECTED POPULATION, BY AGE AND SEX: 1961 TO 1990

(Absolute figures in thousands. As of July 1. Figures may not add to totals due to rounding)

	1961[1]	1965	1970	1975	1980	1985	1990	Percent distribution						
								1961[1]	1965	1970	1975	1980	1985	1990
BOTH SEXES														
All ages.....	13,746	14,159	14,467	14,783	15,077	15,289	15,459	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under 15 years.....	3,743	3,586	3,335	3,300	3,361	3,410	3,350	27.2	25.3	23.1	22.3	22.3	22.3	21.7
15 to 19 years.....	1,062	1,264	1,295	1,159	1,092	1,052	1,127	7.7	8.9	9.0	7.8	7.2	6.9	7.3
20 to 24 years.....	875	1,041	1,257	1,286	1,151	1,085	1,046	6.4	7.4	8.7	8.7	7.6	7.1	6.8
25 to 29 years.....	893	855	1,030	1,246	1,275	1,142	1,078	6.5	6.0	7.1	8.4	8.5	7.5	7.0
30 to 34 years.....	972	910	847	1,020	1,235	1,265	1,134	7.1	6.4	5.9	6.9	8.2	8.3	7.3
35 to 39 years.....	1,028	965	898	837	1,009	1,223	1,253	7.5	6.8	6.2	5.7	6.7	8.0	8.1
40 to 44 years.....	637	1,014	950	884	825	995	1,207	4.6	7.2	6.6	6.0	5.5	6.5	7.8
45 to 49 years.....	877	586	991	929	865	809	976	6.4	4.1	6.8	6.3	5.7	5.3	6.3
50 to 54 years.....	939	898	570	958	899	838	785	6.8	6.3	3.9	6.5	6.0	5.5	5.1
55 to 59 years.....	826	887	850	542	912	857	800	6.0	6.3	5.9	3.7	6.0	5.6	5.2
60 to 64 years.....	679	761	819	785	503	847	797	4.9	5.4	5.7	5.3	3.3	5.5	5.2
65 years and over...	1,204	1,390	1,625	1,837	1,949	1,766	1,905	8.8	9.8	11.2	12.4	12.9	11.5	12.3
MALE														
All ages.....	6,705	6,911	7,057	7,205	7,344	7,442	7,520	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under 15 years.....	1,912	1,835	1,703	1,676	1,697	1,719	1,691	28.5	26.5	24.1	23.3	23.1	23.1	22.5
15 to 19 years.....	538	644	661	590	557	531	565	8.0	9.3	9.4	8.2	7.6	7.1	7.5
20 to 24 years.....	443	528	638	654	584	551	526	6.6	7.6	9.0	9.1	8.0	7.4	7.0
25 to 29 years.....	448	431	520	630	646	578	545	6.7	6.2	7.4	8.7	8.8	7.8	7.3
30 to 34 years.....	481	456	425	513	622	638	571	7.2	6.6	6.0	7.1	8.5	8.6	7.6
35 to 39 years.....	501	475	447	418	505	613	629	7.5	6.9	6.3	5.8	6.9	8.2	8.4
40 to 44 years.....	309	492	465	438	410	496	602	4.6	7.1	6.6	6.1	5.6	6.7	8.0
45 to 49 years.....	427	284	478	451	425	399	483	6.4	4.1	6.8	6.3	5.8	5.4	6.4
50 to 54 years.....	457	434	274	457	432	407	383	6.8	6.3	3.9	6.3	5.9	5.5	5.1
55 to 59 years.....	394	426	405	256	427	404	382	5.9	6.2	5.7	3.5	5.8	5.4	5.1
60 to 64 years.....	305	353	383	364	231	386	366	4.5	5.1	5.4	5.0	3.1	5.2	4.9
65 years and over...	484	555	657	759	807	720	777	7.2	8.0	9.3	10.5	11.0	9.7	10.3
FEMALE														
All ages.....	7,041	7,248	7,411	7,578	7,733	7,847	7,939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under 15 years.....	1,831	1,752	1,632	1,625	1,664	1,691	1,660	26.0	24.2	22.0	21.4	21.5	21.5	20.9
15 to 19 years.....	523	621	634	568	535	521	562	7.4	8.6	8.6	7.5	6.9	6.6	7.1
20 to 24 years.....	432	514	619	632	566	534	520	6.1	7.1	8.4	8.3	7.3	6.8	6.5
25 to 29 years.....	445	425	510	616	630	565	532	6.3	5.9	6.9	8.1	8.1	7.2	6.7
30 to 34 years.....	491	455	422	507	613	627	562	7.0	6.3	5.7	6.7	7.9	8.0	7.1
35 to 39 years.....	527	490	450	419	504	610	624	7.5	6.8	6.1	5.5	6.5	7.8	7.9
40 to 44 years.....	327	522	484	446	415	500	605	4.6	7.2	6.5	5.9	5.4	6.4	7.6
45 to 49 years.....	450	302	513	477	440	410	494	6.4	4.2	6.9	6.3	5.7	5.2	6.2
50 to 54 years.....	482	463	297	501	467	431	402	6.8	6.4	4.0	6.6	6.0	5.5	5.1
55 to 59 years.....	432	461	446	287	485	453	418	6.1	6.4	6.0	3.8	6.3	5.8	5.3
60 to 64 years.....	374	409	436	421	272	461	431	5.3	5.6	5.9	5.6	3.5	5.9	5.4
65 years and over...	720	835	968	1,078	1,142	1,046	1,128	10.2	11.5	13.1	14.2	14.8	13.3	14.2

[1] As of March 1, 1961. The totals include 11,248 persons of unknown age, of which 5,412 were males and 5,836 were females.

Source:

1961: Stat. roč. 1964, pp. 66-67.

1965: Stat. roč. 1967, p. 75.

1970: The total was reported in Stat. přeh., no. 7/8, 1970, p. 139. The age-sex distribution was estimated by the Foreign Demographic Analysis Division, Bureau of Economic Analysis, U.S. Department of Commerce.

1975-90: Projections prepared by the Foreign Demographic Analysis Division. These projections (series B) are based on the assumptions that mortality will decline, that fertility will remain constant at the 1970 level, and that there will be no migration.

Table XIV. ESTIMATED AND PROJECTED LABOR FORCE PARTICIPATION RATES: 1970 TO 1990

Age and sex	1970	Variant I (Low)				Variant II (High)			
		1975	1980	1985	1990	1975	1980	1985	1990
MALE									
15 to 19 years.....	46.5	46.0	45.5	45.0	44.5				
20 to 24 years.....	93.4	92.9	92.4	91.9	91.4				
25 to 29 years.....	98.2								
30 to 34 years.....	98.9								
35 to 39 years.....	97.8		1970 rates held constant				1970 rates held constant		
40 to 44 years.....	97.1								
45 to 49 years.....	96.1								
50 to 54 years.....	93.8								
55 to 59 years.....	89.3								
60 to 64 years.....	55.6	53.1	50.6	48.1	45.6				
65 years and over..	24.8	23.6	22.3	21.1	19.8				
FEMALE									
15 to 19 years.....	51.6	51.1	50.6	50.1	49.6	1970 rates held constant			
20 to 24 years.....	69.2	68.7	68.2	67.7	67.2				
25 to 29 years.....	64.5					65.0	65.5	66.0	66.5
30 to 34 years.....	66.6					67.1	67.7	68.1	68.6
35 to 39 years.....	73.8		1970 rates held constant			74.3	74.8	75.3	75.8
40 to 44 years.....	76.0					77.0	78.0	79.0	80.0
45 to 49 years.....	74.5					75.5	76.5	77.5	78.5
50 to 54 years.....	67.0					68.0	69.0	70.0	71.0
55 to 59 years.....	43.1	40.6	38.1	35.6	33.1	1970 rates held constant			
60 to 64 years.....	30.3	28.3	26.3	24.3	22.3				
65 years and over..	7.8	7.3	6.8	6.3	5.8				

Source and Methodology:

1970: Table V.

Variant I: All years:

Male:

15 to 24 years: Reduced by 0.1 percentage point per year to allow for an expected continuing increase in enrollment in secondary, vocational-technical, and higher schools.

25 to 59 years: The 1970 LFPR's were held constant.

60 to 64 years: Reduced by 0.5 percentage points per year.

65 years and over: Reduced by 0.25 percentage points per year.

Female:

15 to 24 years: Same as for males.

25 to 54 years: The 1970 LFPR's were held constant.

55 to 59 years: Same as for males in the 60-64 year age group.

60 to 64 years: Reduced by 0.4 percentage points per year.

65 years and over: Reduced by 0.1 percentage point per year.

LFPR's for males and females 60 years and over were reduced as indicated to allow for an increased retirement rate at these ages.

Variant II: All years:

Male:

All ages: LFPR's were held constant.

Female:

15 to 24 years; 55 years and over: LFPR's were held constant.

25 to 39 years: Increased by 0.1 percentage point per year.

40 to 54 years: Increased by 0.2 percentage point per year.

The increases for women 25-54 years were based on the assumption that there are labor reserves in these age groups. The assumption is based on a comparison of Czechoslovak rates with those for other Eastern European countries as given in International Labour Office, Year Book,1969, pp. 31-38.

APPENDIX A

Special Measures of Agricultural Manpower

Like most other countries, Czechoslovakia collects more manpower information than that described elsewhere in this report. Much of this additional information is highly detailed and technical in nature, and usually is not published but used internally for planning and other administrative purposes. A considerable amount of data has been released in Czechoslovak publications on additional measures of agricultural manpower, however, and this appendix presents these data as they pertain to two measures--total number of participants and man-hour inputs.

In section A, the focus is on published statistics on all participants in agriculture. These data come primarily from agricultural censuses or surveys. The first part of the section deals with the scope and coverage of the reported data, and the second part presents a discussion of the data themselves, in terms of magnitude and trends. Section B is concerned with the measurement of labor inputs in terms of man-hours. The estimates presented, made separately for each sector and subsector, are for 1962, the year for which the most abundant data are available. Approximate values of gross agricultural output per man-hour of labor input are derived for all of agriculture and for each of its major components, and an attempt is made to relate labor inputs to corresponding values of output. Finally, section C summarizes the little information available on labor force utilization and worktime in agricultural activities.

The information presented in this appendix lends strong reinforcement to the statements concerning a general labor shortage in Czechoslovakia made elsewhere in the report. Czechoslovak agriculture is no longer an easy source of labor for other branches of the economy. On the contrary, agriculture itself needs additional labor which can perhaps be found in nonagricultural sources or in the households. The shortage of skilled and young agricultural workers is especially reflected in the low estimated value of gross output per man-hour of input in Czechoslovak agriculture in general, and in the private farm section in particular.

A. Number of participants

Of the three major sources of data on persons engaged in agricultural activities in Czechoslovakia--agricultural censuses, population censuses, and periodic statistical reports--the first yields the most comprehensive information. Each person who takes part in agricultural activities is counted, sometimes more than once if he works in more than one agricultural establishment. Population censuses cover all persons defined as economically active in agriculture, but exclude those persons whose agricultural activities are their secondary occupation. Annual average employment figures, which are derived from periodic establishment or institutional reports, as a rule are limited to one employment category, persons permanently active in agriculture. The materials on and estimates of numbers of participants presented here are based primarily on the agricultural census results.

1. Scope and Coverage

An agricultural census usually is taken every year in Czechoslovakia. Manpower figures collected in these censuses represent the numbers of persons who took part in agricultural activities during the year. Theoretically, this participation can vary from a few hours spent during the year by a collective farmer's daughter on their private plot to more than 300 days of work by her father in livestock-raising activities.

a. Permanently Active.--The largest category of persons enumerated in the agricultural censuses are those listed as "persons permanently active in agriculture" (osoby trvale činné v zemědělství). This category is defined differently for each sector (see part C of chapter I).

b. Apprentices.--Contrary to the practice in most other Eastern European countries, apprentices in Czechoslovak agriculture, as in the other branches of the economy, are listed separately from other employed persons. (Reported employment figures for machine and tractor stations, however, include apprentices.) This

exclusion may be due to the relatively low level of participation or utilization of apprentices in actual production. The fact that they are reported in the manpower section of the statistical yearbooks rather than in the education section indicates that most of their time is spent in practical training outside the classroom. The system of training has changed several times since the end of World War II, and now seems to be concentrated in schools or centers for apprentices which may administratively be attached to industrial or other establishments. Data are not available on the division of apprentices' time between classroom study and on-the-job training. Figures given here for the total numbers of apprentices are taken from or based on data in various official yearbooks. These data are not collected in the agricultural censuses, but probably are taken from the rolls of the schools for apprentices.

c. Machine and Tractor Stations.--The employment data published for the machine and tractor stations cover all categories of personnel, including apprentices. These data, which are reported in the statistical yearbooks, originate in the periodic establishment reports. There may be some inconsistencies of coverage in this series due to the reclassification of persons engaged in industrial, construction, and transportation activities from agriculture to these respective branches. Since no quantitative information on these statistical transfers is available, no adjustments for internal consistency of employment in the machine and tractor stations were possible. Rough computations indicate that the total number of persons involved in all reclassifications would not exceed 5,000.

d. Helping Family Members.--The employment category whose coverage is most vaguely defined is that of helping family members (see part C of chapter I). Especially complex is the classification of women in agricultural households. Since records of time spent on various activities, such as household chores, work in the field, work in the stable, etc., are not kept, answers to the census taker can be no more than rough guesses. An answer can be influenced by a number of factors, and it may vary from person to person and from census to census. Further, there are other persons living in many peasant households, such as pensioners or underage children, who temporarily or occasionally participate in private agricultural activities but who are explicitly excluded from the census. Family members in nonagricultural households who take part in private agricultural activities are also excluded. Thus, even an agricultural census which aims at a considerably wider coverage of persons engaged directly in agricultural activities than a population census, does not register all labor participants, especially in private and subsidiary agriculture.

Coverage of the category of helping family members varies widely under different employment measures (table A-1). The 1961 population census shows 43,000 persons as helping family members, most of whom, if not all, were probably in the private sector.[1] The numbers of helping family members in the cooperative and private sectors, as enumerated in the agricultural census of February 1, 1962, were 263,000 and 589,000, respectively, and estimates of helping family members in the cooperative sector in 1962 based on labor input data and amount of land worked yield a total of 578,000 persons. Differences between these figures stem primarily from the numbers of labor-days earned and the manner in which the many persons who have permanent or main jobs outside of agriculture are counted. There are no figures reported separately for helping family members in annual employment statistics since, by definition, such data cover only permanently active persons.

2. Magnitude and Distribution

a. Total.--A series of figures representing the total number of participants in agricultural work in Czechoslovakia, by sector and employment category, for the years 1948-69, is presented in table A-2. As indicated above, these data are heterogeneous in nature and origin: the permanently active and helping family member figures are reported in agricultural censuses, the apprentice figures are from school registers, and the machine and tractor station figures are from establishment reports. Differences in concepts are not great, however, and the data shown should represent the total number of participants fairly accurately.

Generally, both major employment categories--permanently active and helping family members--show a downward trend in the postwar years, although within individual sectors the trends are widely different. From 1954, the first year for which agricultural statistics are fairly adequate, to the end of 1969, total employment in agriculture declined by well over 1 million

[1]Based primarily on a comparison of the economically active with the permanently active population in the cooperative and private sectors of agriculture. While the economically active population--being a broader employment measure--covers more persons in the cooperative sector than the permanently active population, the situation is reversed in the private sector apparently due to the separate listing of helping family members in that sector by the population census.

Table A-1. NUMBER OF PERSONS ENGAGED IN THE COOPERATIVE AND PRIVATE SECTORS OF AGRICULTURE, BY TYPE OF MEASURE: VARIOUS DATES, 1961-62

(In thousands)

Type of measure	Economically active		Permanently active		Helping family members	
	Cooperative sector	Private sector	Cooperative sector	Private sector	Cooperative sector	Private sector
Population census (March 1, 1961)....	931	166	(X)	(X)	(1)	43
Agricultural census (February 1, 1962).....	(X)	(X)	837	232	263	589
Average of end-of-year employment data for 1961 and 1962.....	(X)	(X)	822	227	(2)	(2)
Estimates based on sample surveys (as of the end of 1962).....	(X)	(X)	820	(3)	578	(3)

X Not applicable.

[1]No sectoral breakdown is available, but most, if not all, were probably allocated to the private sector. See note 1.

[2]Included in permanently active if they worked at least the same minimum number of labor-days as the permanently active persons; otherwise, they were excluded.

[3]No estimates were made for the private sector.

Source:
Population census: International Labour Office, Year Book 1968, p. 114.
Agricultural census: Table A-2.
Average annual employment: Based on Stat. roč. 1969, p. 330.
Estimates: Average of figures in columns 1 and 2 in table A-13.

persons, or by 35 percent. The numbers of permanently active persons and helping family members both dropped during these years by approximately the same proportion as the total. A peak in employment in machine and tractor stations, 56,000 persons, was reached in 1956 and, although that level was attained again in 1958, it dropped to 25,000 by 1969. This decline was probably caused by the reorganization of the stations and the transfer of some of their functions to collective farms.

The state sector is the only one which has shown a generally upward trend, although it, too, has declined slightly since 1965. In the cooperative sector the trend in number of participants reflects closely the collectivization drive, which reached its peak in 1960. Participation in this sector actually has been on the decline since 1959. The few figures available on helping family members in the cooperative sector also indicate an upward trend to a peak of 484,000 persons in 1959 and a subsequent reduction to 146,000 in 1969. Except for a short period when the collectivization drive was relaxed in the midfifties, the private sector of agriculture has experienced a steady decline in labor participation. Of the 2,049,000 permanently active persons in 1949, only 147,000, or 7 percent, were left in 1969.

b. Age-Sex Structure.--Results of the agricultural census indicate that at least until the midsixties the permanently active work force in Czechoslovak agriculture was getting older (table A-3). The proportion aged 15 to 19 years dropped sharply from 1935 to 1955 and has continued to decline since, while the share in ages 20 to 49 years dropped gradually to 1965. At the same time, those aged 50 to 59 and 60 years and over increased proportionately. The slight reversal in the trends since 1965 for all ages above 20 years probably indicates a slowdown in the exodus of young people from the farms.

Agricultural manpower in Czechoslovakia grew considerably older during the collectivization drive in the 1950's. Young persons found jobs in industry or construction more attractive and steadier than the work on farms which they or their parents no longer owned or, in case of private farming, where they were subjected to excessive compulsory deliveries. But even the younger generation which has matured in the atmosphere of the relatively relaxed agricultural policies of the late fifties and sixties still is leaving the farm. It has been estimated that, because of aging and attrition, Czechoslovak agriculture needs an influx of about 40,000 young persons annually. Efforts to recruit this number

Table A-2. NUMBER OF PARTICIPANTS IN AGRICULTURE, BY SECTOR AND CATEGORY: 1948 TO 1969

(In thousands. As of various dates around the end of the year--see Note)

Year	All sectors					State sector				Cooperative sector				Private sector			
	Total	Permanently active	Apprentices	Machine and tractor stations	Helping family members	Total	Permanently active	Apprentices	Machine and tractor stations	Total	Permanently active	Apprentices	Helping family members	Total	Permanently active	Apprentices	Helping family members
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1948.....	(NA)	2,222	2	(NA)	(NA)	(NA)	(NA)	0	(NA)	(NA)	(NA)	0	(NA)	(NA)	(NA)	2	(NA)
1949.....	(NA)	2,127	5	11	(NA)	89	77	1	11	(NA)	1	0	(NA)	(NA)	2,049	4	(NA)
1950.....	(NA)	1,894	8	28	(NA)	150	120	2	28	(NA)	64	1	(NA)	(NA)	1,710	5	(NA)
1951.....	(NA)	1,755	11	33	(NA)	(NA)	(NA)	(NA)	33	(NA)	113	2	(NA)	(NA)	(NA)	(NA)	(NA)
1952.....	(NA)	1,615	13	38	(NA)	175	134	3	38	(NA)	322	8	(NA)	(NA)	1,159	2	(NA)
1953.....	(NA)	1,672	18	43	(NA)	203	155	5	43	(NA)	348	11	(NA)	(NA)	1,169	2	(NA)
1954.....	3,064	1,797	24	46	1,197	230	177	7	46	(NA)	300	12	(NA)	(NA)	1,320	5	(NA)
1955.....	3,279	1,839	26	54	1,360	256	194	8	54	(NA)	327	14	(NA)	(NA)	1,318	4	(NA)
1956.....	3,177	1,756	25	56	1,340	266	201	9	56	(NA)	372	16	(NA)	(NA)	1,183	0	(NA)
1957.....	3,168	1,692	26	52	1,398	252	193	7	52	970	683	19	268	1,946	816	0	1,130
1958.....	(NA)	1,608	27	56	(NA)	272	209	7	56	(NA)	857	20	(NA)	(NA)	542	0	(NA)
1959.....	2,825	1,455	37	48	1,285	262	206	8	48	1,423	910	29	484	1,140	339	0	801
1960.....	2,350	1,357	34	29	930	261	223	9	29	1,230	878	25	327	859	256	0	603
1961.....	2,220	1,307	34	27	852	275	238	10	27	1,124	837	24	263	821	232	0	589
1962.....	2,187	1,277	39	27	844	287	248	12	27	1,069	807	27	235	831	222	0	609
1963.....	(NA)	1,261	42	29	(NA)	291	249	13	29	(NA)	798	29	(NA)	(NA)	214	0	(NA)
1964.....	(NA)	(NA)	39	22	(NA)	(NA)	(NA)	(NA)	22	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	0	(NA)
1965.....	2,012	1,192	32	24	764	329	292	13	24	896	726	19	151	787	174	0	613
1966.....	(NA)	(NA)	27	26	(NA)	(NA)	(NA)	(NA)	26	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	0	(NA)
1967.....	1,986	1,169	24	26	767	324	291	7	26	(NA)	718	17	(NA)	(NA)	160	0	(NA)
1969.....	1,980	1,132	22	25	801	298	267	6	25	(NA)	718	16	146	(NA)	147	0	656

NA Not available.

Note: Data on the permanently active and helping family members are from agricultural censuses, as follows: 1948-53--from censuses taken as of January 1 the following year; 1954--from the census of January 10 the following year; 1955, 1957-63, and 1969--from censuses taken as of February 1 the following year; 1956--from the census of December 15 in that year; and 1965 and 1967--from censuses taken as of December 1 in those years. Data on apprentices are reported as of January 1 of the following year, except those for 1948-57, which are computed from reported annual average figures. Data on number of personnel employed in machine and tractor stations are reported as of January 1 the following year, except those for 1964-67, which are annual averages. Data for the cooperative sector for 1969 include about 2,000 permanently active persons employed in the so-called joint cooperative establishments which were organized in 1967 but are not listed separately in the yearbooks. Cf. Glaserová, "Labor," 1970, p. 297, and Stat. roč. 1970, p. 294.

Source and Methodology:

Column 1: Sum of columns 6, 10, and 14, except for 1954-56, 1967, and 1969, which represent the sums of columns 2, 3, 4, and 5.

Column 2:

1948-63: Houška and Glaserová, "Some Remarks," 1966, p. 70.
1965: Glaserová and Houška, "The Development," 1966, p. 231.
1967, 1969: Stat. roč. 1970, p. 294.

Column 3: Reported data on apprentices were adjusted to exclude apprentices in forestry. Data for all years (except 1957, which is based on interpolation of the 1956 and 1958 data) are from the following yearbooks: Stat. roč. 1957, p. 68; Stat. roč. 1958, p. 89; Stat. roč. 1959, pp. 92 and 102; Stat. roč. 1960, pp. 90 and 96; Stat. roč. 1961, pp. 106 and 113; Stat. roč. 1962, pp. 113 and 120; Stat. roč. 1963, pp. 113 and 123; Stat. roč. 1964, pp. 120 and 129; Stat. roč. 1965, pp. 121 and 131; Stat. roč. 1966, pp. 112 and 118; Stat. roč. 1968, pp. 129 and 139; Stat. roč. 1969, pp. 119 and 135; and Stat. roč. 1970, pp. 119 and 133.

Column 4:

1949-50, 1952-56: Stat. roč. 1957, p. 139.
1951: Interpolated linearly between the figures for 1950 and 1952.
1957: Stat. roč. 1960, p. 249.
1958-63: Stat. roč. 1964, p. 265.
1964-67: Stat. roč. 1966, p. 322, and Stat. roč. 1969, p. 328. Figures were reported as annual averages.
1969: Stat. roč. 1970, p. 329.

Table A-2. NUMBER OF PARTICIPANTS IN AGRICULTURE, BY SECTOR AND CATEGORY: 1948 TO 1969--Continued

Column 5:
1954-57, 1959-62: Houška and Glaserová, "Some Remarks," 1966, p. 70.
1965: Glaserová and Houška, "The Development," 1966, p. 232.
1967: Stat. roč. 1969, p. 330.
1969: Stat. roč. 1970, p. 294.
Column 6: Sum of columns 7, 8, and 9.
Column 7:
1949-50, 1952-56: Stat. roč. 1957, p. 139.
1957-59: Stat. roč. 1960, p. 249.
1960-63: Stat. roč. 1964, p. 264.
1965: Stat. roč. 1966, p. 324.
1967, 1969: Stat. roč. 1970, p. 294.
Column 8:
1948-56: The total number of apprentices (column 3) was first divided among the three sectors on the basis of the proportions of permanently active persons in each, except for 1948 when all apprentices were assumed to be in the private sector. In accordance with the plans and mechanization demands, the proportions of the state and collective sectors were raised by a factor of three at the expense of the declining private sector.
1957-69: The total number of apprentices was divided between the state and collective sectors on the basis of the proportion of permanently active persons in each. An assumption was made that, on the basis of the trend and nature of employment in the private sector, there were no--or less than 500--employed persons left in that sector classified as apprentices.
Column 9: Same as for column 4.
Column 10: Sum of columns 11, 12, and 13.
Column 11:
1948-50, 1952-69: Same as for column 7.
1951: Stat. roč. 1957, p. 141.
Column 12: Derived in the same manner as column 8.
Column 13:
1957, 1959-60: Zem. ekon., no. 7, 1961, Supplement, p. III.
1961: Bruthans, "Labor," 1963, p. 376.
1962: Zem. ekon., no. 7, 1963, Supplement, p. IV.
1965: Zem. ekon., no. 2, 1966, Supplement, p. I.
1969: Glaserová, "Labor," 1970, p. 297.
Column 14: Sum of columns 15, 16, and 17.
Column 15: Same as for column 7.
Column 16: Derived in the same manner as column 8.
Column 17: Same as for column 13, except for 1961, which was derived as the difference between the 1961 figures in columns 5 and 13.

of persons, however, has proven to be on the average only 70 to 80 percent successful.[2]

The shortage of apprentices and other young persons in agriculture in serious enough to warrant a steady concern on the part of ministerial and other officials. Extensive surveys have been taken to determine the reasons for the low interest of young people in agricultural employment. A number of actions were taken or suggested to improve their working and training conditions and to make available to them various recreational facilities. So far, the results of these efforts have been minimal.[3]

Data on the age-sex structure of the 1,277,000 persons permanently active in agriculture in Czechoslovakia and each of the two regions in 1963 are provided in table A-4.[4] The most favorable age structure, with respect to economic potential, was found in the state sector, where only 10 percent were 60 years and older. In contrast, 19 percent of those in the cooperative sector and 26 percent of those in the private sector were in that age group. The higher proportions of males 60 years and older in all three sectors suggests that many older women, who undoubtedly take part in agricultural work, do not meet the minimum requirement for inclusion in the permanently active category. This is especially true of the cooperative sector. The proportion of agricultural manpower in these older ages was almost the same in the Czech Lands (18.4 percent) as in Slovakia (18.9 percent), but there was some variation among the types of farms. The largest difference was in private agriculture where 41 percent of the men and 29 percent of the women in the Czech Lands were over age 59 as compared with 35 and 17 percent, respectively, in Slovakia.

[2]Chochola, "Problems," 1964, p. 411. Other analysts have estimated the annual requirement for new workers in agriculture as between 52,000 and 80,000, depending on the assumed retirement age. See Divila and Novotný, "Agriculture," 1966, Saturday Supplement, p. 2.

[3]Glaserová, "About the Course," 1968, p. 460; Jeníček, "Consolidation," 1969, p. 25; Trnka, "A Seminar," 1963, pp. 421-426; Zezula and Dušeková, "To Recruit," 1965, Supplement, pp. I-IV; and Zoubek, "Reasons," 1965, pp. 238-241. What makes the situation still worse is that after finishing their training on state or collective farms, a large number of apprentices apparently look for jobs outside of agriculture.

[4]The year 1963 is the latest for which detailed statistics are available for persons permanently active in agriculture. The age distribution of helping family members is not available for any year.

Table A-3. PERCENT DISTRIBUTION OF PERSONS PERMANENTLY ACTIVE IN AGRICULTURE, BY AGE: 1935 TO 1969

(Data for 1935 are as of December 31; those for 1955, 1959, and 1969 are from agricultural censuses taken as of February 1 the following year; and those for 1965 and 1967 are from censuses taken as of December 1 the same year)

Age	1935[1]	1955	1959	1965	1967	1969
All ages.....	100.0	100.0	100.0	100.0	100.0	100.0
15 to 19 years.....	13.3	7.8	5.4	4.3	3.9	3.4
20 to 49 years.....	59.0	53.5	51.0	49.9	52.9	56.2
50 to 59 years.....	14.6	24.2	27.8	26.1	22.9	20.3
60 years and over.....	13.1	14.5	15.8	19.7	20.3	20.1

[1]Percentages for this year are based on data relating to a coverage which was probably broader than that for the other years shown.

Source:
1935-59: Bruthans, "The Impact," 1963, p. 91.
1965: Stat. roč. 1966, p. 325.
1967: Stat. roč. 1968, p. 334.
1969: Stat. roč. 1970, p. 295.

Table A-4. PERSONS PERMANENTLY ACTIVE IN AGRICULTURE, BY AGE, SEX, SECTOR, AND REGION: FEBRUARY 1, 1963

Age, sex, and region	All sectors	State sector	Cooperative sector	Private sector
CZECHOSLOVAKIA				
Both sexes	1,276,611	248,025	806,586	222,000
15 to 59 years	1,039,048	223,045	651,831	164,172
60 years and over	237,563	24,980	154,755	57,828
Males	605,901	146,826	380,581	78,494
15 to 59 years	465,851	129,171	286,965	49,715
60 years and over	140,050	17,655	93,616	28,779
Females	670,710	101,199	426,005	143,506
15 to 59 years	573,197	93,874	364,866	114,457
60 years and over	97,513	7,325	61,139	29,049
CZECH LANDS				
Both sexes	807,228	184,000	561,722	61,506
15 to 59 years	658,331	164,735	452,747	40,849
60 years and over	148,897	19,265	108,975	20,657
Males	361,007	99,701	238,737	22,569
15 to 59 years	282,989	87,294	182,455	13,240
60 years and over	78,018	12,407	56,282	9,329
Females	446,221	84,299	322,985	38,937
15 to 59 years	375,342	77,441	270,292	27,609
60 years and over	70,879	6,858	52,693	11,328
SLOVAKIA				
Both sexes	469,383	64,025	244,864	160,494
15 to 59 years	380,717	58,310	199,084	123,323
60 years and over	88,666	5,715	45,780	37,171
Males	244,894	47,125	141,844	55,925
15 to 59 years	182,862	41,877	104,510	36,475
60 years and over	62,032	5,248	37,334	19,450
Females	224,489	16,900	103,020	104,569
15 to 59 years	197,855	16,433	94,574	86,848
60 years and over	26,634	467	8,446	17,721

Source: Statistická 1963, pp. 436 and 439-441.

There were close to 65,000 more females than males permanently active in 1963. This was due to the shortage of males in the Czech Lands, where there were only 81 males per 100 females active in agriculture. In contrast, there were 109 males for each 100 active females in Slovakia. The explanation for the relative abundance of males in Slovak agriculture is to be found partly in the larger families in Slovakia, which requires that women devote a greater amount of time to child care and housework, and partly in the fact that with gradual collectivization relatively more women in the Czech Lands have joined the collective farms. In Slovakia relatively more women remained housewives or limited their agricultural activities to the private plots. In addition, men in the Czech Lands have many more alternative job opportunities than do men in Slovakia.

The overall sex ratio of the 235,000 helping family members in cooperative agriculture and the 609,000 in private agriculture in 1963 was 102 males per 100 females. In the cooperative sector this ratio was only 72, but in the private sector it was 116:

Area	Total	Cooperative sector	Private sector
Czechoslovakia...	102	72	116
Czech Lands.....	103	95	105
Slovakia.....	101	59	132

Source: Zem. ekon., no. 7, 1963, Supplement, p. IV.

In the Czech Lands, the sex ratio in the cooperative and private sectors was fairly balanced, but in Slovakia there were twice as many males per 100 females in private agriculture than in cooperative agriculture.

c. Regional Distribution.--Data on the distribution of total participants in agriculture by kraj and oblast within the two regions of Czechoslovakia are not available, but figures in table A-5 on the permanently active persons indicate the general outlines of such a distribution. Seven of each 10 permanently active persons in the Czech Lands and slightly more than half (52 percent) in Slovakia were in the cooperative sector. Within both regions the highest proportions of persons in the cooperative sector were, as might be expected, in the more fertile agricultural areas--the Eastern Bohemian and Southern Moravian kraje of the Czech Lands, and the Western Slovakian Oblast of Slovakia. The rugged, mountainous oblast of Central Slovakia was the only subregion with more than half (57 percent) of its permanently active persons occupied in the private sector; the Eastern Slovakian Oblast had 40 percent in the private sector, but all other subregions in the country had 15 percent or less. The Northern and Western kraje of Bohemia had the highest proportions of permanently active persons in the state sector--47 and 38 percent, respectively. All other subregions had less than 30 percent.

d. Adjusted Number of Helping Family Members.--Persons classified as permanently active in the agricultural censuses are counted as such only once, no matter how many labor-days they accumulate in 1 year above the minimum required. It is possible, however, for a person to be classified as permanently active in, say, the state sector, and simultaneously to be listed as a helping family member in the cooperative or private sector. Also, a person may be listed as a helping family member in both collective and private agriculture, in which case one of his activities is identified as the primary one. Or, a

Table A-5. PERSONS PERMANENTLY ACTIVE IN AGRICULTURE, BY SECTOR AND SUBREGION: FEBRUARY 1, 1963

Region and subregion	All sectors	Percent distribution			
		All sectors	State sector	Cooperative sector	Private sector
Czechoslovakia.....	1,276,611	100.0	19.4	63.2	17.4
Czech Lands.....	807,228	100.0	22.8	69.6	7.6
Capital city of Prague.....	1,986	100.0	98.8	0	1.2
Central Bohemian Kraj.....	131,981	100.0	26.2	69.4	4.4
Southern Bohemian Kraj.....	102,116	100.0	20.0	70.0	10.0
Western Bohemian Kraj.....	72,983	100.0	38.1	56.3	5.6
Northern Bohemian Kraj.....	61,284	100.0	46.8	48.7	4.5
Eastern Bohemian Kraj.....	132,853	100.0	16.0	77.1	6.9
Southern Moravian Kraj.....	198,608	100.0	13.8	79.4	6.8
Northern Moravian Kraj.....	105,417	100.0	20.8	64.1	15.1
Slovakia.....	469,383	100.0	13.6	52.2	34.2
Western Slovakian Oblast.....	181,827	100.0	20.9	67.9	11.2
Central Slovakian Oblast.....	151,571	100.0	7.7	35.7	56.6
Eastern Slovakian Oblast.....	135,985	100.0	10.6	49.4	40.0

Source: Statistická 1963, pp. 435-436.

Table A-7. ESTIMATED NUMBER OF HELPING FAMILY MEMBERS WORKING ONLY IN ONE AGRICULTURAL ORGANIZATION, BY SECTOR: 1954 TO 1969

(In thousands. As of various dates around the end of the year--see NOTE to table A-2)

Sector	1954	1955	1956	1957	1959	1960	1961	1962	1965	1967	1969
Total.....	461	524	516	537	496	359	328	325	294	295	308
Cooperative.....	(NA)	(NA)	(NA)	105	190	129	103	92	59	(NA)	57
Private.....	(NA)	(NA)	(NA)	432	306	230	225	233	234	(NA)	251

NA Not available.

Source:
1954-57, 1960-69: Computed as the products of the percentages given in table A-6 and employment totals for this category given in table A-2.
1959: Table A-6.

Numbers of all participants in agriculture, adjusted to eliminate double-counting of persons within agriculture, as well as between agriculture and other branches of the economy, are given in table A-8. The adjusted data probably better represent the numbers of persons generally defined as fully employed, but certain qualifications should be made. The participation in agricultural activities of helping family members who have no other jobs, many of whom are aged or otherwise handicapped, is on the whole probably only slightly more intensive than the participation of those helpers who have primary jobs elsewhere. Thus, even the adjusted figures may exaggerate total manpower in agriculture if converted to man-days on the assumption of full-time employment.

e. Comparison of Agricultural Manpower Measures.--The three measures of agricultural manpower discussed here and in the body of the report are compared in table A-8. Differences among the measures occur because of date of reference, scope of activities covered, and degree of participation in work. It was noted earlier in this appendix that the measure which most closely indicates the total number of persons working in agricultural work is the number of participants. A heterogeneous measure which comprises several different concepts of participation, it provides an overall view of the magnitude of agricultural labor, but yields little information on the intensity of utilization. As noted above, the adjusted numbers of participants, which are estimated to exclude double-counting, probably are the best indicators of different persons involved in agricultural and no other work. The economically active measure, which is based on concepts used in population censuses, is essentially a gainful worker indicator representing the number of persons whose usual occupation is in agriculture. It derives from a count of physical persons involved in agricultural work, but it, like the number of participants, yields little information on intensity of utilization. The employed population comes closest to measuring intensity of participation by physical persons, and is therefore the lowest of the three series in all years. This measure adjusts part-time participation of employed persons to that of an annual average, full-time participant, thus making allowances for seasonality and other irregular types of employment. If it could be matched with the corresponding output, it would be the most suitable measure for use in productivity calculations.

B. Labor inputs

The best measure of labor utilization in agriculture, as in other activities, is that based on man-day or man-hour inputs or such data converted to full-time, man-year employment. An effort is made in this section to utilize all available information on labor inputs in Czechoslovak agriculture, primarily the results of two sample surveys showing the worktime spent by collective farmers and their dependents in collective and private plot farming. Some of the results of these surveys of the cooperative sector were helpful in computations of labor inputs in the other two sectors, especially in the private sector.

1. State Sector

As in the case of the other Eastern European Communist countries, data available for the state agricultural sector are better and more abundant in Czechoslovakia than for either of the other two sectors. This is to be expected, since the state farms and other state-owned agricultural organizations are required to keep a detailed record of

person may be listed as a helping family member in agriculture and also be included in employment statistics for one of the nonagricultural branches. Since it is the category of helping family members in which multiple counting of the same person may occur, the statistics for this category were adjusted to eliminate the effects of double-counting.

Information on helping family members classified by primary and secondary occupation probably is collected in each agricultural census, but is usually not published. Such data are available for 1960, however, as shown in table A-6. According to these figures, 38.5 percent of the persons who were counted as helping family members in Czechoslovak agriculture in that year had no other employment. This proportion was about the same for both the Czech Lands and for Slovakia, and for the cooperative and private sectors. On the assumption that the proportions of all helpers solely employed in agriculture at the beginning of 1960 (end of 1959) can be applied to totals as reported for other years, it is possible to estimate the numbers of persons whose only job was to help in either collective or private agriculture in these other years.[5] These estimates (table A-7) necessarily show the same trends as the aggregate data on helping family members in table A-2. They indicate that the number of helping family members who hold no other jobs has been declining since 1959. The largest proportionate drop has been in the cooperative sector.

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[5]The reliability of these estimates is uncertain. One official statement indicates that in private agriculture in 1963 there were in the whole country "about 240,000 helping family members holding no other jobs," about 39 percent of the total, and very close to the 38.2 percent reported for 1960. (Brhlovič, Ekonomické, 1965, p. 207.) Another writer gives a total figure of helping family members on collective farms at the end of 1965 as 151,000, "of which 126,000 were not employed elsewhere." This proportion, 83 percent, seems high. Klinko, "Level," 1966, p. 876.

Table A-6. HELPING FAMILY MEMBERS IN AGRICULTURE, BY SECTOR AND REGION: FEBRUARY 1, 1960

(Absolute figures in thousands)

Sector and region	Total	Working only in one agricultural organization		With primary occupation elsewhere		
		Number	Percent	Total	In another agricultural organization	In a nonagricultural establishment
CZECHOSLOVAKIA						
Total	1,285	496	38.5	789	59	730
Cooperative	484	190	39.3	294	17	277
Private	801	306	38.2	495	43	452
CZECH LANDS						
Total	721	278	38.6	443	34	409
Cooperative	245	83	33.9	162	9	153
Private	476	195	41.0	281	25	256
SLOVAKIA						
Total	564	218	38.5	346	26	320
Cooperative	239	107	44.8	132	8	124
Private	325	111	34.2	214	18	196

Source: Vraný, "Persons," 1960, p. 494.

their inputs and outputs, like any other state enterprise. Regularly published statistics refer to the number of participants but there is little, if any, information on the amount of actual time put into agricultural activities by these persons. Thus, as in the case of the other two sectors, the labor inputs for the state agricultural sector had to be estimated.

Man-hour estimates for 1962 were computed separately for the different employment categories and for different organizations (table A-9). For state farms, the estimates are based on the reported number of hours required to cultivate one hectare of agricultural land in state farms in 1962, by each category of personnel except apprentices.[6] The labor input of one apprentice was assumed to equal one-third of the annual man-hour input of one permanent worker.

[6]Houška, "On the Possibilities," 1965, p. 514. This source shows that Kčs 1,000 of gross agricultural output on the state farms required, in 1962, a labor input of 69 hours by the permanent and year-round workers, 8 hours by the brigade and seasonal workers, and 9 hours by the technical and economic personnel, or a total of 86 man-hours. The state sector, being the most capital intensive, has the highest return per unit of labor, whereas the private sector, being the most labor intensive, should have the highest return per unit of land.

Table A-8. COMPARISON OF MEASURES OF AGRICULTURAL MANPOWER: 1950 TO 1969

(In thousands)

Year	Number of participants (end of year)		Economically active (July 1)	Employed population (annual average)
	Reported	Adjusted		
1950.....	(NA)	(NA)	2,188	2,058
1951.....	(NA)	(NA)	(NA)	1,922
1952.....	(NA)	(NA)	(NA)	1,850
1953.....	(NA)	(NA)	(NA)	1,858
1954.....	3,064	2,328	(NA)	1,898
1955.....	3,279	2,443	2,113	1,933
1956.....	3,177	2,353	2,093	1,894
1957.....	3,168	2,307	2,024	1,822
1958.....	(NA)	(NA)	1,977	1,764
1959.....	2,825	2,036	1,837	1,623
1960.....	2,350	1,779	1,681	1,468
1961.....	2,220	1,696	1,598	1,380
1962.....	2,187	1,668	1,549	1,334
1963.....	(NA)	(NA)	1,531	1,316
1964.....	(NA)	(NA)	1,499	1,289
1965.....	2,012	1,542	1,471	1,262
1966.....	(NA)	(NA)	1,464	1,257
1967.....	1,986	1,514	1,435	1,227
1968.....	(NA)	(NA)	1,411	1,207
1969.....	1,980	1,487	1,395	1,192

NA Not available.

Source:

Number of participants:

Reported: Table A-2.

Adjusted: Reported figures minus helping family members who have a primary occupation elsewhere; the latter were computed as the difference between the total number of helping family members (table A-2, column 5) and those working only in one agricultural organization (table A-7).

Economically active: Table VI.

Employed population: Table VII.

Table A-9. ESTIMATED NUMBER OF MAN-HOURS WORKED IN THE STATE SECTOR OF AGRICULTURE, BY TYPE OF ORGANIZATION AND REGION: 1962

(In thousands)

Type of organization	Czechoslovakia	Czech Lands	Slovakia
Total	839,793	606,510	233,283
State farms	474,856	377,019	97,837
Permanent and all-season workers	372,520	296,140	76,380
Brigade and seasonal workers	45,592	36,244	9,348
Technical and economic personnel	47,816	38,012	9,804
Apprentices	8,928	6,623	2,305
Other state agricultural organizations	304,544	186,992	117,552
Machine and tractor stations	60,393	42,499	17,894

NOTE: It is not specified in all the sources used, but statements in some sources and various indications and cross-checks derived from ancillary materials lead to the belief that these data include both animal husbandry and crop growing. The same is true of data in tables A-12 and A-14 as well as other tables derived from them.

Source and Methodology:

State farms:

The area of agricultural land in state farms (Stat. roč. 1965, p. 286) was multiplied by the number of man-hours input required per hectare by each category of personnel except apprentices, in 1962, as reported in Houška, "On the Possibilities," 1965, p. 514. For apprentices, the number given in table A-2, divided between Slovakia and the Czech Lands in proportion to state agricultural employment of each region, was multiplied by one-third of the time input of a fully-employed worker, as given in Brhlovič, Plánovanie, 1965, p. 65. This fraction was used on the basis of the assumption that it takes the work of three apprentices to equal that of one permanently active person.

Other state agricultural organizations:

The area of agricultural land of these organizations (Stat. roč. 1965, pp. 262 and 286) was multiplied by the number of man-hours input required per hectare for collective farms in the Czech Lands and in Slovakia.

Machine and tractor stations:

The number of persons employed in each region (Stat. roč. 1965, p. 296), was multiplied by the average number of days worked by a permanently active person on state farms in the country as a whole (Brhlovič, Plánovanie, 1965, p. 65). This sum was then multiplied by 8 on the basis of the assumption that the average length of a work day was 8 hours.

The estimates of labor inputs in other state agricultural organizations are based on the assumption that their man-hour requirements per unit of agricultural land correspond to such requirements on the collective farms. It seems reasonable to compare those subsidiary agricultural organizations of such institutions or establishments as schools, people's committees, and nonagricultural ministries with the less mechanized collective farms rather than with the more mechanized state farms. In general, these organizations would tend to resemble collective farms in the utilization of machinery and structure of work, though not in respect to work incentives or payment systems. In addition, raising special livestock or growing a selected crop would seem to demand an increased human, as opposed to mechanical, input and thus raise the labor input requirements per unit of agricultural land, vis-à-vis such requirements on the state farms.

The labor input estimates of machine and tractor station personnel are based on the assumption that each person on the average worked the same number of days as did permanent workers on state farms and that each day consisted of 8 hours of work.[7] The assumption of a regular 8-hour workday throughout the year may fall short of correctly measuring the actual average length of a workday during the summer months, but it seems to be more than offset by counting apprentices--who could not be numerically separated from other machine and tractor station personnel--as permanent workers. It was further assumed that there were no short-term brigade workers or day laborers, outside of the "personnel of record," employed by the machine and tractor stations. As in the case of other state

[7]See Brhlovič, Plánovanie, 1965, p. 65.

agricultural enterprises, there is no evidence that the machine and tractor stations employed persons who could be classified as helping family members.

2. Cooperative Sector

Table A-10 shows the results of sample surveys on labor imputs by members of collective farm families in the Czech Lands conducted for the years 1955-59. The surveys were made of families whose members were fully employed on collective farms, and they covered both collective farm and private plot activities. It is assumed that the survey results indicate the magnitude of average labor inputs per collective farm family and per working member of those collective farm families whose members participated in collective farm work. Consequently, the families of workers and employees hired by collective farms presumably were not included.

The survey results show a generally increasing amount of time put into collective farm work per family, while the opposite seems to have been true of work on private plots. The increasing amount of time spent on collective farm work was due to the slightly higher number of working members per collective farm family, since the labor inputs per working member declined overall in both collective and private-plot farming between 1955 and 1959. Thus, the slight increase in the average number of labor-days earned per working member of the collective farm family during that period was due to a growth in labor productivity, a "softening" of the work norms, or, most likely, to a combination of these two factors.

The numbers of hours worked and the number of man-days, i.e., 8-hour workdays, per working member of the collective farm family derived from the survey results were assumed to be averages of the labor inputs of both the fully and partially employed in collective and private-plot farming. To separate the fully employed, or permanently active, from the partially employed,

Table A-10. SELECTED INDICATORS OF LABOR INPUTS PER COLLECTIVE FARM FAMILY IN THE CZECH LANDS: 1955 TO 1959

Item	1955	1956	1957	1958	1959
Average number of working members per family	2.0	2.0	2.0	2.1	2.1
Total number of hours worked	6,130	6,186	6,232	6,122	6,073
On collective farms	4,592	4,684	4,680	4,697	4,720
On private plots	1,538	1,502	1,552	1,425	1,353
Total number of hours worked per family member	3,065	3,093	3,116	2,916	2,892
On collective farms	2,296	2,342	2,340	2,237	2,248
On private plots	769	751	776	679	644
Estimated number of man-days per working member [1]	383	387	390	365	362
In collective farming	287	293	293	280	281
In private plot farming	96	94	97	85	81
Average number of hours per labor-day on collective farms	5.4	5.4	5.3	5.2	5.1
Number of labor-days per working collective farm family	863	871	884	904	924
Number of labor-days per working member of collective farm family	431	435	442	430	440

[1]The high numbers of man-days, which in some cases exceed the number of calendar days in a year, indicate that a considerable portion of work put into private plot farming took place after a regular 8-hour day.

Source: The estimated numbers of man-days per working member of a collective farm family were derived by dividing the total numbers of hours worked per collective farm family member in each year by 8. All other data are given in Černín, "On the Labor," 1964, pp.217-228.

or helping family members, it was further assumed that the husband and wife in each collective farm family belonged in the former category, while all other family members belonged in the latter. This assumption seems to be justified on the basis of sample data available for 1959 when, on the average, 54.1 percent of the 4,720 hours worked per family in collectivized agriculture in the Czech regions were contributed by the head of the family (husband), 37.2 percent by the wife, and 8.7 percent by all other family members.[8] Thus, if one labor-day consisted of 5.1 hours (table A-10), both husband and wife would have earned more than 240 labor-days per year, the minimum required for classification as permanently active. By equating the worktime of all working collective farm husbands and wives with the total number of persons permanently active in collective agriculture, a labor input by permanently active persons of 260,713,000 labor-days or 166,204,000 man-days for collectivized agriculture in the Czech Lands in 1959 can be computed.[9]

A basis for estimating labor inputs in the cooperative sector for the entire country is available from the published results of another sample survey, taken probably in 1962 and covering 28 collective farms (or 0.4 percent of the total of 7,912) in various economic regions of Czechoslovakia. This survey gathered information on labor inputs in terms of man-hours per hectare of agricultural land contributed by the permanently active and helping family members, separately for males and females and for major types of agricultural area. Persons contributing an input of 1,200 man-hours or more were classified as permanently active and those contributing less than this amount were classified as helping family members. The survey data, which are summarized in table A-11, show the average number of man-hours worked by permanently active men and women; the average number of man-hours worked by helping family members was computed from information in the table.

By taking 1,200 man-hours as a classification criterion, the survey appears to be more restrictive in its coverage of persons permanently active in agriculture than do the annual statistics published in the yearbooks. Through 1962, the criterion was the rather nebulous one that persons should work on the collective farm systematically and regularly for the entire year. Since 1962, the classification borderline has been set at 240 labor-days in livestock raising and 130 labor-days in crop growing.[10] Taking the average of man-hours per hectare of agricultural land for all four major types of agricultural areas and the total area of agricultural land in the cooperative sector, data from the survey have been used to compute the total number of man-hours put into the cooperative sector of Czechoslovak agriculture by male and female permanently active and helping family members (table A-12). Likewise, from the area of agricultural land in the cooperative sector in each region, the total numbers of permanently active and helping family members were derived for both the Czech Lands and Slovakia.

Table A-13 shows two sets of synthetic estimates of the numbers of permanently active persons and helping family members in the cooperative sector. One set was derived by dividing the estimated total number of man-hours worked in the sector by the estimated average number of man-hours per person permanently active and per helping family member. The other set was derived by multiplying the estimated number of persons required per hectare of agricultural land by the total area of agricultural land. The two estimates and their subtotals are necessarily close, since one factor--area of agricultural land--figures prominently in the derivation of each. The numbers of permanently active persons shown in table A-13 are about 12,000 higher than the number reported.[11] For the Czech Lands the estimates are smaller by about 43,000 persons, whereas for Slovakia they are larger by 55,000. These differences in opposite directions may be due to the fact that the survey results represent averages for the whole country and may not be closely representative of its subdivisions. Furthermore, since the estimated data for the permanently active persons are more restricted than the published data, and since the survey results--because they were tabulated separately for major agricultural areas--would tend to show the minimal rather than the average labor input requirements for the agricultural area as a whole, the estimates for the Czech Lands seem to be more reasonable than those for Slovakia.

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[8] Černín, "On the Labor," 1964, p. 228.

[9] Derived by multiplying the average of the husband's and wife's man-hours (2,554 + 1,756 = 4,310 ÷ 2 = 2,155) by the number of permanently active persons in the Czech Lands in 1959 (617,000--Stat. roč. 1960, p. 249), and dividing the result by 5.1 to obtain the number of labor-days and 8.0 to obtain the number of man-days. The husband's and wife's man-hours were derived from the proportions of the 4,720 hours worked by the husband (54.1 percent) and the wife (37.2 percent).

[10] For years prior to 1963 the criterion for separating permanently active persons from helping family members was as low as 120 labor-days, although it could be set higher in different regions. See Budík, "Problems," 1961, p. 506.

[11] Stat. roč. 1966, p. 324.

Table A-11. LABOR INPUTS BY PERMANENTLY ACTIVE AND HELPING FAMILY MEMBERS ON 28 COLLECTIVE FARMS, BY TYPE OF AGRICULTURAL AREA AND SEX: 1962

Item	Type of agricultural area			
	Corn growing	Sugar beet growing	Potato growing	Mountainous
Average number of man-hours worked per hectare of agricultural land	588	554	450	392
Male	365	287	249	254
Female	223	267	201	138
Permanently active	493	481	400	353
Male	347	268	235	242
Female	146	213	165	111
Helping family members	95	73	50	39
Male	18	19	14	12
Female	77	54	36	27
Number of persons active in agriculture per 100 hectares of agricultural land	41.8	36.0	27.2	23.8
Male	18.9	15.1	13.0	13.3
Female	22.9	20.9	14.2	10.5
Permanently active	21.9	20.6	17.0	15.8
Male	13.9	10.4	9.0	10.1
Female	8.0	10.2	8.0	5.7
Helping family members	19.9	15.4	10.2	8.0
Male	5.0	4.7	4.0	3.2
Female	14.9	10.7	6.2	4.8
Average number of man-hours worked per person:				
Permanently active:				
Male	2,496	2,577	2,611	2,396
Female	1,825	2,088	2,063	1,947
Helping family members:				
Male	360	404	350	375
Female	517	505	581	562

Source: Average numbers of man-hours per helping family member were derived by dividing the number of man-hours of helping family members per 100 hectares of agricultural land by the number of helping family members per 100 hectares of agricultural land. All other data are given in Bruthans, "Labor," 1963, pp. 378-380. Figures in the table for the average annual number of man-hours worked per permanently active person in the mountainous areas are slightly different from those given in the source, which are suspected to contain a typographical error.

Table A-12. ESTIMATED NUMBER OF MAN-HOURS WORKED IN THE COOPERATIVE SECTOR OF AGRICULTURE, BY EMPLOYMENT CATEGORY, SEX, AND REGION: 1962

(In thousands)

Employment category and sex	Czechoslovakia	Czech Lands	Slovakia
Total	2,227,398	1,411,810	815,588
Permanently active	1,881,792	1,192,752	689,040
Male	1,189,188	753,753	435,435
Female	692,604	438,999	253,605
Helping family members	278,784	176,704	102,080
Male	69,696	44,176	25,520
Female	209,088	132,528	76,560
Brigade workers	66,822	42,354	24,468

Source and Methodology:

The area of agricultural land in the cooperative sector, listed separately for the Czech Lands and Slovakia in Stat. roč. 1966, p. 282, was multiplied by the average number of man-hours per hectare worked by the permanently active and helping family members, male and female, given in table A-11 (average for the four types of agricultural area). The number of man-hours worked by brigade workers is estimated on the basis of the statement that in 1963 they contributed 3 percent of the total labor input in the collective sector of Czechoslovak agriculture. See Houška, "On the Possibilities," 1965, p. 512. The above estimates compare favorably with the expected lower labor inputs in the cooperative sector of Czechoslovak agriculture in 1963, 2,222,522,000 man-hours, as reported in ibid., p. 515.

Table A-13. ESTIMATES OF THE NUMBER OF PARTICIPANTS IN THE COOPERATIVE SECTOR OF AGRICULTURE, BY EMPLOYMENT CATEGORY, SEX, AND REGION: 1962

(Excluding short-term brigade workers)

Employment category and sex	Czechoslovakia		Czech Lands		Slovakia	
	Based on the number of working persons per 100 hectares of agricultural land	Based on man-hour inputs	Based on the number of working persons per 100 hectares of agricultural land	Based on man-hour inputs	Based on the number of working persons per 100 hectares of agricultural land	Based on man-hour inputs
	(1)	(2)	(3)	(4)	(5)	(6)
Total	1,402,632	1,393,759	889,042	883,418	513,590	510,341
Male	653,400	659,068	414,150	417,743	239,250	241,325
Female	749,232	734,691	474,892	465,675	274,340	269,016
Permanently active	818,928	820,632	519,068	520,148	299,860	300,484
Male	470,448	471,713	298,188	298,990	172,260	172,723
Female	348,480	348,919	220,880	221,158	127,600	127,761
Helping family members	583,704	573,127	369,974	363,270	213,730	209,857
Male	182,952	187,355	115,962	118,753	66,990	68,602
Female	400,752	385,772	254,012	244,517	146,740	141,255

Source and Methodology:

Column 1: Sum of columns 3 and 5.

Column 2: Sum of columns 4 and 6.

Columns 3 and 5: Computed by multiplying the number of persons active per hectare of agricultural land (table A-11) by the respective total areas of agricultural land in the cooperative sector given in Stat. roč. 1966, p. 282.

Columns 4 and 6: Computed by multiplying the total number of man-hours worked in the cooperative sector in each area (table A-12) by the average number of man-hours for permanently active and helping family members, male and female (table A-11), which were assumed to be identical in both areas.

The estimated numbers of helping family members on collective farms shown in table A-13 are substantially larger than the reported figure for 1962 shown in table A-2. Due to the fact that the reported figure includes only those persons who completed at least 50 labor-days during the year, the estimates in table A-13 can be expected to be considerably higher than the reported number. The estimated totals suggest that the decline in the total number of helping family members in the cooperative sector may have been much slower than the statistics published in the yearbooks indicate.[12]

[12]This supposition is supported by a diagram in Flek and Choma, "On the Relationship," 1967, p. 3, which shows a consistent decline in the number of permanently active persons in agriculture since 1960, but since 1961 an equally consistent rise in the number of all persons contributing to agricultural output. Similarly, the number of brigade workers helping in agriculture during the peak season has been, at least in the more recent years, consistently increasing, as shown in Veleba, "New," 1966, p. 133.

3. Private Sector

Labor inputs in private agriculture are extremely difficult to measure. People usually work on their private plots after their regular working hours or between their other jobs, and they do not keep records of such time. Private farmers, likewise, do not ordinarily count their hours of work. However, published results from the special surveys of the Czech Lands can be combined with the data in table A-12 to yield estimates of total labor inputs in private agriculture in Czechoslovakia in 1962, including private plots as well as farms.

Man-hour inputs in the private sector were estimated separately for the private plots and private farms (table A-14). The estimates for private plots were based on the relative distribution of hours which the permanently active and helping family members in one (average) collective farm family in the Czech Lands worked, in 1959, in collective farming and private-plot farming, and the estimated total number of man-

Table A-14. ESTIMATED NUMBER OF MAN-HOURS WORKED IN THE PRIVATE SECTOR OF AGRICULTURE, BY TYPE OF ACTIVITY, E MPLOYMENT CATEGORY, AND REGION: 1962

(In thousands)

Type of activity and employment category	Czechoslovakia	Czech Lands	Slovakia
Total	2,235,964	1,041,724	1,194,240
Permanently active	1,646,278	766,993	879,285
Helping family members	589,686	274,731	314,955
Private plots[1]	652,302	413,454	238,848
Permanently active	480,272	304,415	175,857
Helping family members	172,030	109,039	62,991
Private farms[2]	1,583,662	628,270	955,392
Permanently active	1,166,006	462,578	703,428
Helping family members	417,656	165,692	251,964

[1]Includes only the private plots of collective farmers and their families.
[2]In addition to man-hours worked on private farms, includes estimates of man-hours worked on private plots of workers and employees, craftsmen, and other.

Source and Methodology:

Private plots: Computed by multiplying proportions of total man-hours worked by permanently active and helping family members on their private plots and on the collective farms, as derived from data in Černín, "On the Labor," 1964, p. 228, by the estimated total number of man-hours put into collective farming, as given in table A-12.

Private farms: Ratios of agricultural land area of private plots of collective farmers and the estimated number of man-hours of permanently active and helping family members required for this area were multiplied by the agricultural area of private farms, given for the Czech Lands and Slovakia in Stat. roč. 1966, p. 282. In addition, the private farm man-hour estimates cover the small private plots for which separate data are not published. It was assumed that the area of these plots amounted to 10 percent of the total agricultural area classified as "not belonging to agricultural establishments" (see note 13). This area was multiplied by the ratios of agricultural area of private plots of collective farmers and the estimated number of man-hours required for this area by permanently active and helping family members in the Czech Lands and Slovakia.

hours worked by all permanently active and helping family members in the collectivized sector of the Czech Lands and Slovakia in 1962 (table A-12). Thus, in addition to the assumptions made with respect to the data in tables A-10 and A-12, as described earlier, it was further assumed that the proportions of hours worked in collective and private-plot farming remained basically the same in 1962 as they had been in 1959, and that they were applicable to the collective farm families in Slovakia as well.

The labor input estimates for private farms were based on the assumption that 1 hectare of agricultural land on private farms required the same amount of labor as 1 hectare of private plots of the collective farmers. At first consideration it may appear that the estimates of man-hours on private farms are somewhat high, especially since the private farms represent larger agricultural units than the individual private plots, thus making possible the use of certain laborsaving machinery and equipment. However, this factor probably is offset by the inclusion in the private farms in table A-14 of the private plots of workers and employees, craftsmen, and others who are probably less efficient as farmers than the collective farmers are on their private plots. [13] Furthermore, many, if not most, of the collective farmers' private plots, especially in the Czech Lands, are consolidated into relatively large strips of land,[14] where major jobs like plowing can be performed by tractors for all who share in the plot. Finally, the average age of private farmers is higher than that of any other employment category in Czechoslovakia. This factor combined with the probably lower quality of privately-owned land would also tend to raise the man-hour requirement per hectare of privately-owned agricultural land. These and other factors (difficulties in obtaining or lack of funds to buy needed fertilizers, long distances to various strips of land, etc.) seem to justify the assumption that in terms of actual man-hours worked there was probably little difference between a unit of land classified as private plot or as private farm.[15]

4. Total

Table A-15 shows the estimated total man-hour inputs into Czechoslovak agriculture in 1962 by the two main sectors and their major components. It is impossible to determine the exact degree of accuracy of these estimates, but available ancillary information yields no obvious contradictions or discrepancies. Even if these figures are only gross approximations, however, they still should give a fair picture of the total magnitude and sectoral distribution of labor inputs into Czechoslovak agriculture at that time.

From data available in yearbooks and derived thus far in this appendix it is possible to compute man-hour values of labor inputs from gross values of output in each sector. These

[13] The official statistics seem to cover only those private plots which have an area greater than 10 ares (approximately 0.25 acres), or private plots of less than 10 ares of agricultural land if this land is farmed commercially, or if it has a vineyard of more than 5 ares; and forest land and stocked ponds of over 10 ares in area, if they are not a part of an agricultural establishment. (See Elias, The Labor, 1963, p. 65.) It was therefore necessary to estimate the labor inputs on the private plots which this definition excludes, and the area which is combined with such other land as the roads, streets, airports, playgrounds, streams, rivers, lakes, etc. All such area in 1962 amounted to 66,000 hectares and it was assumed that 10 percent of it was utilized for small private plots. Labor input requirements per hectare of this land, the output from which is entirely for household consumption, were assumed to be the same as for each hectare of private plots of a larger average size.

[14] Zubina, "Work," 1966, p. 284.

[15] By stretching the foregoing assumptions still further, it is possible to make estimates of man-year equivalents of work by the permanently active and by helping family members in both cooperative and private sectors of agriculture in 1962, which were not included in the annual average employment figure. Dividing the number of man-hours worked by permanently active persons in the cooperative sector (1,881,792,000--table A-12) by the number of permanently active persons in that sector (822,000—table A-2, computed as the average of the end-of-year figures for 1961 and 1962) yields the figure of 2,289 as the number of man-hours worked by one permanently active person in the cooperative sector of agriculture in 1962.

The number of man-hours worked by helping family members in the cooperative sector in 1962 was 278,784,000 (table A-12). Dividing this by 2,289, the above average number of man-hours worked per permanently active person, gives an estimate of 121,793 man-year equivalents for helping family members on collective farms. Assuming that the same number of hours are worked by the permanently active on their private plots and by helping family members on private farms and private plots, the total man-hour inputs to these activities--480,272,000, 417,656,000, and 172,030,000, respectively (table A-14)--divided by 2,289 yield estimates of 209,817 man-year equivalents from the permanently active on their private plots, 182,462 man-year equivalents from helping family members on private farms and 75,155 on private plots. Thus, the total number of man-year equivalent persons is estimated as 589,227. This figure represents 8.6 percent of the adjusted total annual employment in 1962 (6,260,000 + 589,000).

These estimates exclude the small labor inputs by workers and employees on their small household plots, as well as those of labor brigades.

computations, which do not take into account sectoral differences in investment and other factors, are summarized in table A-16.

Table A-15. ESTIMATED NUMBER OF MAN-HOURS WORKED IN AGRICULTURE, BY SECTOR: 1962

(In thousands)

Sector	Czecho-slovakia	Czech Lands	Slovakia
Total.....	5,303,155	3,060,044	2,243,111
Socialist sector.	3,067,191	2,018,320	1,048,871
State sector...	839,793	606,510	233,283
Cooperative sector.....	2,227,398	1,411,810	815,588
Private sector...	2,235,964	1,041,724	1,194,240
Private plots..	652,302	413,454	238,848
Private farms..	1,583,662	628,270	955,393

Source: Tables A-9, A-12, and A-14.

It was noted that 1962 was not a good year for Czechoslovak agriculture, for in other years of the early 1960's the gross value of agricultural output was, on the average, about 8 percent higher than the value shown in the table. However, the gross values per man-hour of labor input given in the table show the expected intersectoral and subsectoral variations, with the machine and tractor stations having by far the highest and private farms the lowest values. The valuation of gross agricultural output in Czechoslovakia follows the gross value concept and includes the value of purchased raw materials and intermediate products, as well as the total value of final products.

The computed values of gross output per man-hour of labor input are rather low for all sectors, but the value for private farms is truly miniscule. This may be due to several factors. First, private agricultural land is of very low quality which may be due to the marginality of the soil with respect to cultivation or to the lack

Table A-16. ESTIMATED VALUE OF GROSS AGRICULTURAL OUTPUT, BY SECTOR: 1962

(In 1960 prices)

Sector	Absolute value (thousands of Kčs)	Value per 1 man-hour of labor input (Kčs)	Value per 1 man-hour of labor input (U.S. dollars)	
			Official rate	Tuzex (private) rate
	(1)	(2)	(3)	(4)
Total.....	42,256,017	7.97	1.11	0.19
Socialist sector.....	32,914,000	10.73	1.49	0.26
State sector.....	10,608,391	12.63	1.75	0.30
Machine and tractor stations.....	1,101,757	18.24	2.53	0.43
Cooperative sector.....	22,305,609	10.01	1.39	0.24
Private sector.....	9,342,017	4.18	0.58	0.10
Private plots.....	6,543,527	10.03	1.39	0.24
Private farms.....	2,798,490	1.77	0.25	0.04

NOTE: The total absolute value for the Czech Lands was Kčs 29,291,340,000 and for Slovakia Kčs 12,964,677,000; the absolute values of output by machine and tractor stations for the two regions were Kčs 763,184,000 and Kčs 338,573,000. The corresponding values of output per man-hour of labor input for agriculture were Kčs 9.57 in the Czech Lands and Kčs 5.78 in Slovakia. For machine and tractor stations only, the man-hour values were Kčs 17.96 and Kčs 18.92, respectively.

Source and Methodology:

Column 1: The total gross value of agricultural output, excluding the value of output of machine and tractor stations, as reported in Stat. roč. 1966, pp. 273-274 and 276-277, was divided among the sectors and subsectors according to percentages given in Stat. roč. 1965, p. 259. The gross value of agricultural output of machine and tractor stations was reported in Stat. roč. 1964, p. 273.

Column 2: Column 1 divided by the numbers of man-hours shown in tables A-9 and A-15.

Column 3: Column 2 divided by 7.20.

Column 4: Column 2 divided by 42.00.

of fertilizer, or both. This would not be true of private plots, as a rule, because the land devoted to this is likely similar to that of regular state and collective farms. Second, one cannot expect an old man with a hoe to accomplish as much in 1 hour as a young man in the driver's seat of a tractor. Third, there may have been a tendency in 1962 for private farmers to understate the value of their gross output in order to bring about a cut in the quotas of their compulsory deliveries. Since there were no quotas imposed on the private plots, this tendency would have been absent in private-plot farming. There may be some additional factors, such as fewer intermediate products on private farms, which would tend to depress the gross value of their output. Still, due primarily to the unfavorable age structure and the low productive capacity of their land, the private farmers in the present institutional setup in Czechoslovakia will continue to show the lowest output/input ratio of any other sector or subsector of Czechoslovak agriculture. The difference in output values per man-hour of labor input between the state and cooperative sectors may also be explained by several factors, such as more productive land, higher degree of mechanization, and higher educational attainment of personnel in responsible positions in state agriculture.

C. Labor utilization in agriculture

Agriculture is the one major branch of the economy in which, despite continuing technological advances, such factors as geographic location and climate still impose restriction on type and volume of output and employment. In Czechoslovakia, as in most other countries, the influence of these factors is markedly evident in the seasonal variations of labor input in agriculture. Thus, in the cooperative sector, labor inputs in 1963 ranged from an estimated possible surplus of 115 million man-hours in the first quarter to a "shortage" of 168 million man-hours in the third quarter (table A-17). Converted into employment figures, this represents a net labor shortage during the year of about 94,000 fully employed persons.[16] Thus, even under conditions of an equal quarterly distribution of labor requirements, the collectivized sector of Czechoslovak agriculture would have had a considerable labor force shortage.

Table A-17. AVAILABLE AND REQUIRED MAN-HOUR INPUTS IN THE COOPERATIVE SECTOR OF AGRICULTURE, BY QUARTER: 1963

(In thousands)

Quarter of year	Available	Required	Difference
Total.....	1,982,720	2,222,522	-239,802
First.....	472,865	357,586	+115,279
Second.....	492,965	607,005	-114,040
Third.....	523,949	692,365	-168,416
Fourth.....	492,941	565,566	-72,625

Source: Houška, "On the Possibilities," 1965, p. 515.

The efficient utilization of the collective farm labor force in 1963 primarily concerned finding gainful employment for about 183,000 surplus or reserve personnel during the first quarter of the year.[17] Various suggestions have been made to employ them in nonagricultural activities on collective farms, such as logging, construction, general repair, etc. It has been estimated that if these activities could be performed during the December-March period, the winter surplus of agricultural labor on collective farms could be reduced by about 28,000 persons. The net overall annual labor shortage would then be reduced to 66,000 persons. Other suggestions often mentioned and applicable to the state farms as well as collective farms include closer cooperation in labor force planning between agriculture and nearby industry, increased mechanization, more efficient and complementary organization of labor between the crop-growing and livestock raising activities, and workdays with differentiated numbers of hours of work according to season.[18]

According to estimates based on other sources, the seasonal variations of labor inputs in all of Czechoslovak agriculture are much wider. In 1962 they ranged from 0.4 percent of the total annual inputs in January to 18.4 percent in August (table A-18). These data indicate that the labor inputs were about 46 times higher in August than in January. In terms of absolute figures, this represents a surplus of about 421 million man-hours in January and a shortage of almost 534 million man-hours in August. Using the average number of man-hours worked by a permanently active collective farmer in 1962 (2,551), a surplus of 165,000 fully employed persons is obtained for January, and a shortage of 209,000 for August.[19]

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[16] Houška, "On the Possibilities," 1965, p. 615.

[17] Ibid., pp. 515-517.

[18] Bruthans, "Utilization," 1962, p. 6; Horváth, "Reducing," 1963, pp. 527-537; and Mrvík, "Labor," 1964, pp. 362-363.

[19] These enormous variations in monthly labor requirements may lead to the impression that the data refer to crop-growing activities only. However, the sources given in table A-18 show explicitly or implicitly that all activities in all sectors of agriculture were covered.

A labor shortage in the summer months does not seem to present a serious year-round problem, since most of the persons who usually help during the peak seasons--housewives, pensioners, brigade workers, students--do not seek permanent employment in agriculture anyway. It is a serious problem with respect to agricultural output, however, because of the losses caused by delays due to labor shortage in harvesting, threshing, and other work which should not be postponed.

Table A-18. DISTRIBUTION OF LABOR INPUTS IN AGRICULTURE, BY MONTH: 1962

Month	Percent of total man-hour inputs	Man-hour inputs (000's)	Percent of annual average inputs	Deviation from annual average inputs (000's)	Surplus (+) or shortage (-) of full-time personnel (000's)
	(1)	(2)	(3)	(4)	(5)
Total	100.0	5,303,155	100	00	00
January	0.4	21,213	5	+420,717	+165
February	1.5	79,547	18	+362,383	+142
March	3.8	201,520	46	+240,410	+94
April	7.1	376,524	85	+65,406	+26
May	9.6	509,103	115	-67,173	-26
June	9.9	525,013	119	-83,083	-33
July	10.6	562,134	127	-120,204	-47
August	18.4	975,780	221	-533,850	-209
September	17.3	917,445	208	-475,515	-186
October	14.0	742,442	168	-300,512	-118
November	6.3	334,099	76	+107,831	+42
December	1.1	58,335	13	+383,595	+150

Source:

Column 1: Plha, "On Worktime," 1966, p. 305.

Column 2: Total man-hour inputs from table A-15. Monthly totals derived by applying percent distribution in column 1.

Column 3: Computed from figures in column 2 as percentages of the annual average (average monthly) input of 441,930,000. The latter was computed by dividing the total in column 2 by 12.

Column 4: Computed as the differences between the annual average and the figures in column 2.

Column 5: Computed by dividing man-hour figures in column 4 by the average number of hours (2,551) worked in 1962 by collective farm personnel, used by Houska, "On the Possibilities," 1965, p. 515.

APPENDIX B

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